

FIG. 1B

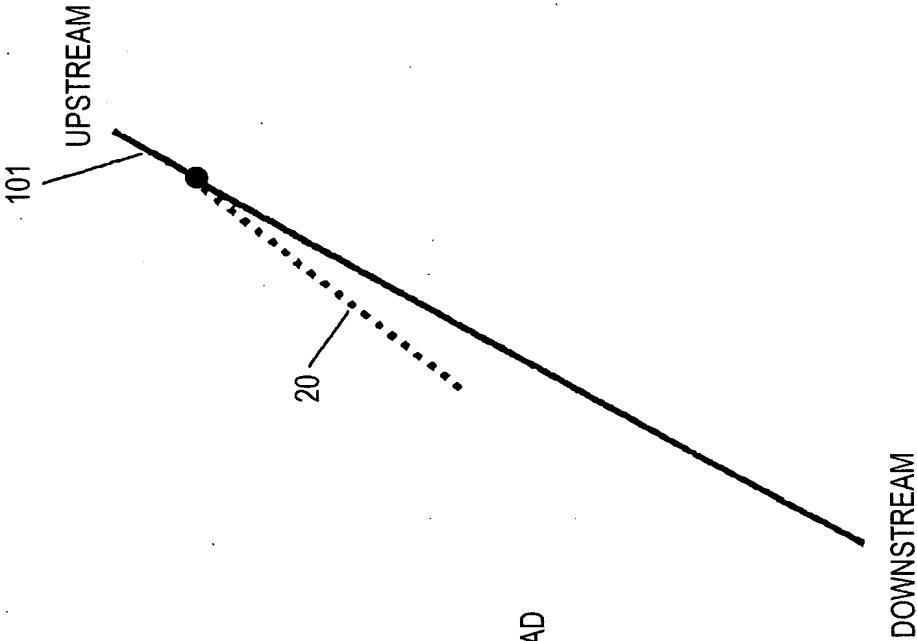


FIG. 1A

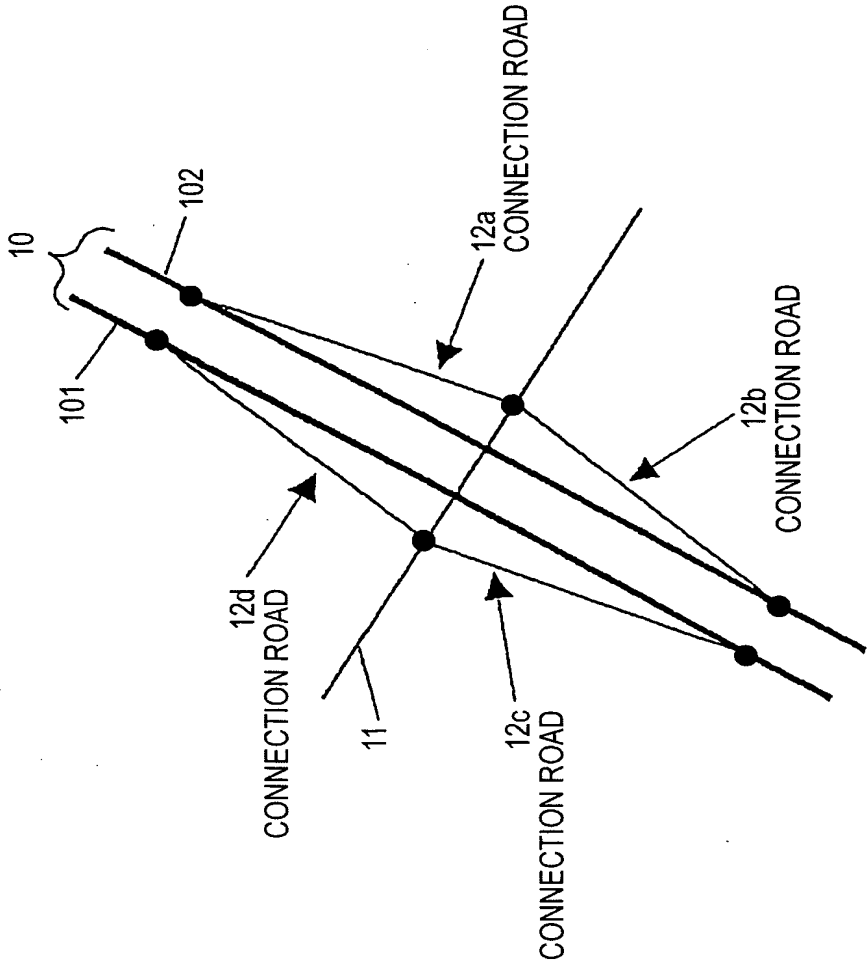


FIG. 2B

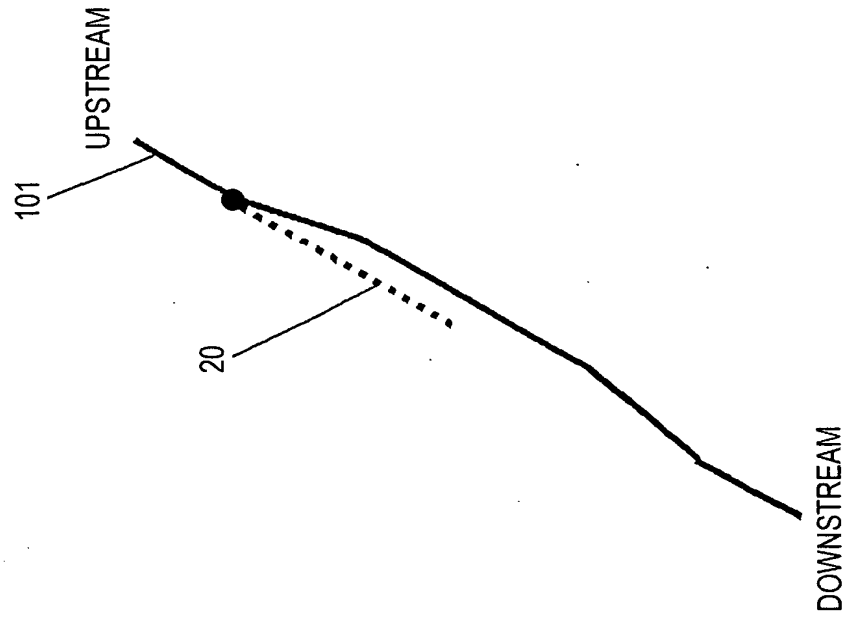


FIG. 2A

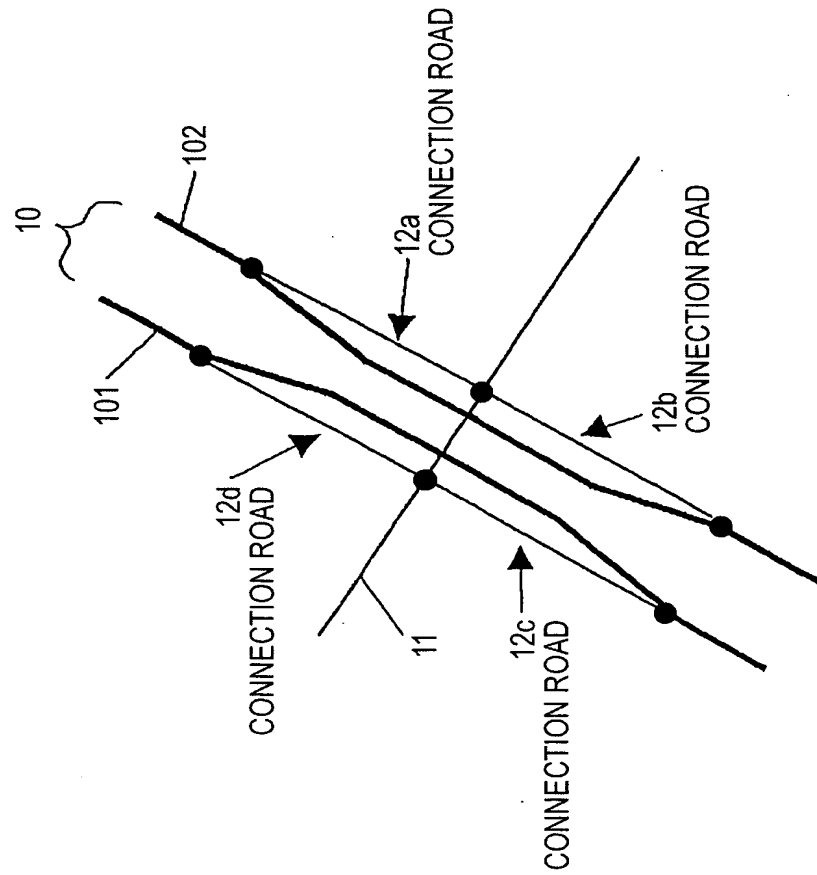


FIG. 3

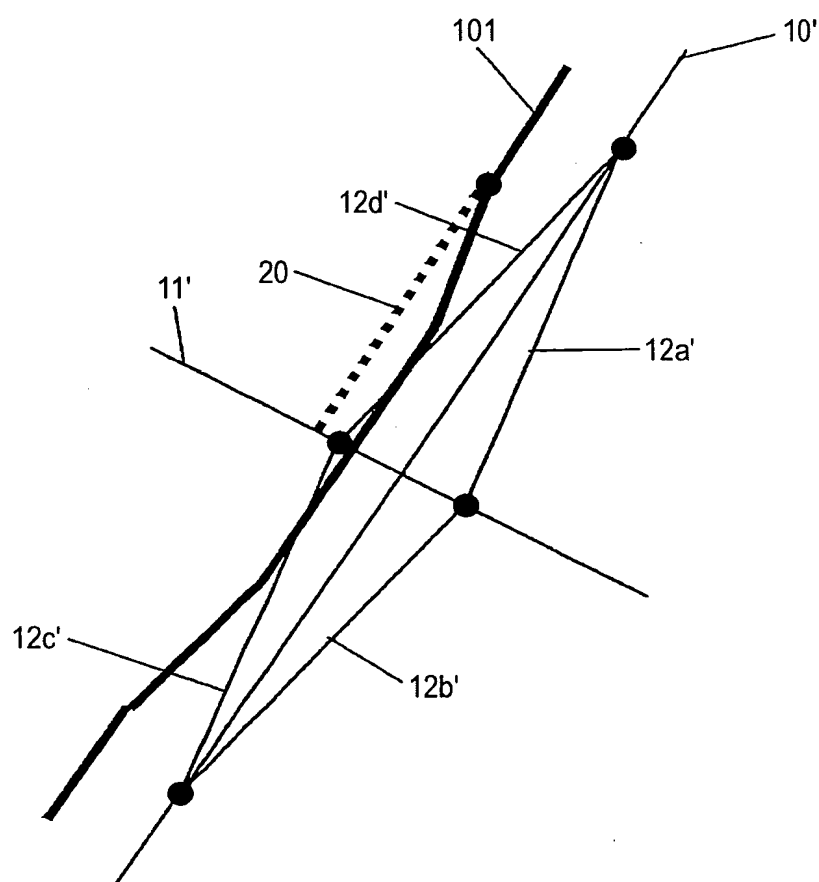


FIG. 4B

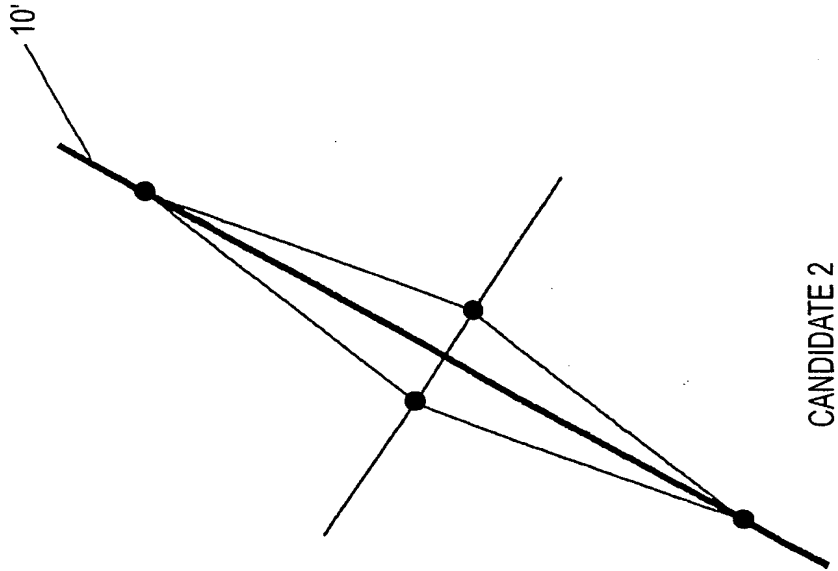


FIG. 4A

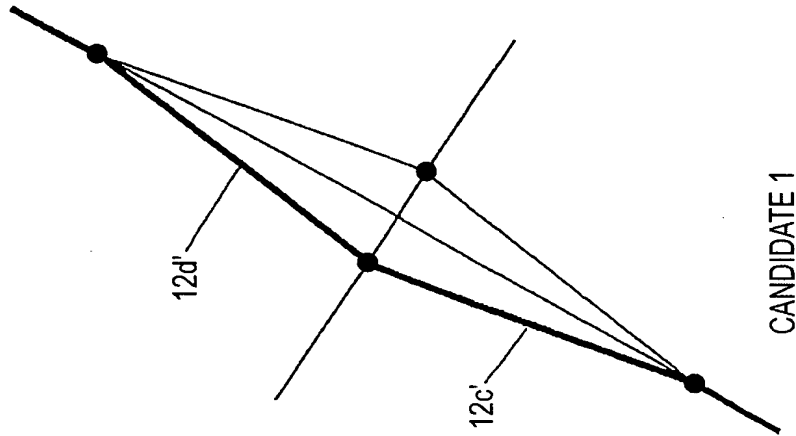


FIG. 5A

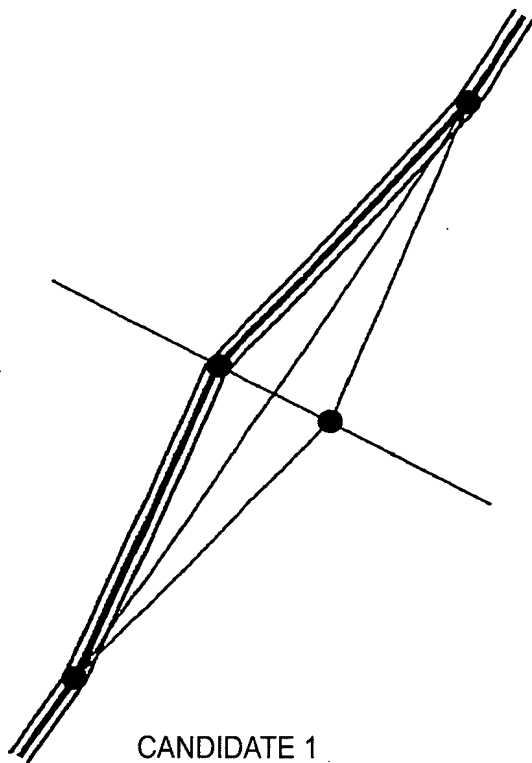


FIG. 5B

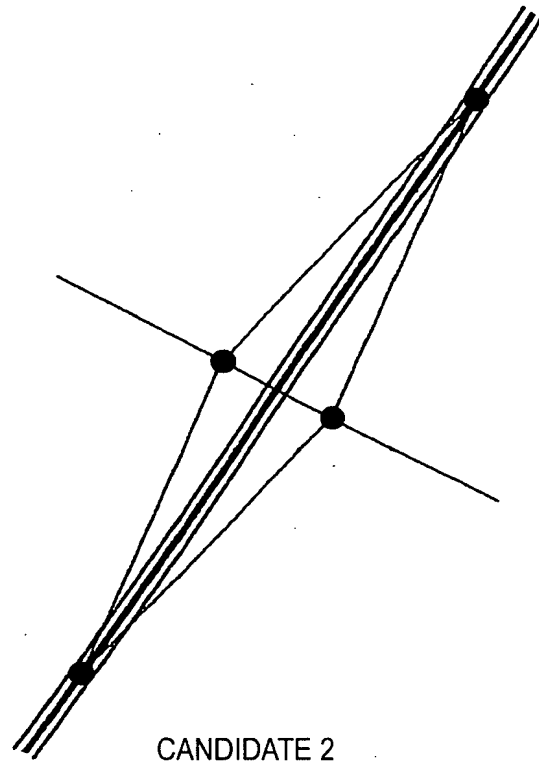


FIG. 6A

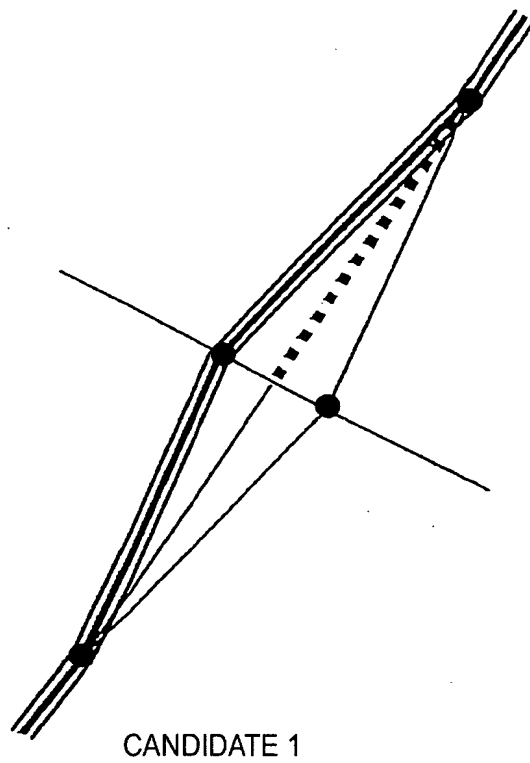


FIG. 6B

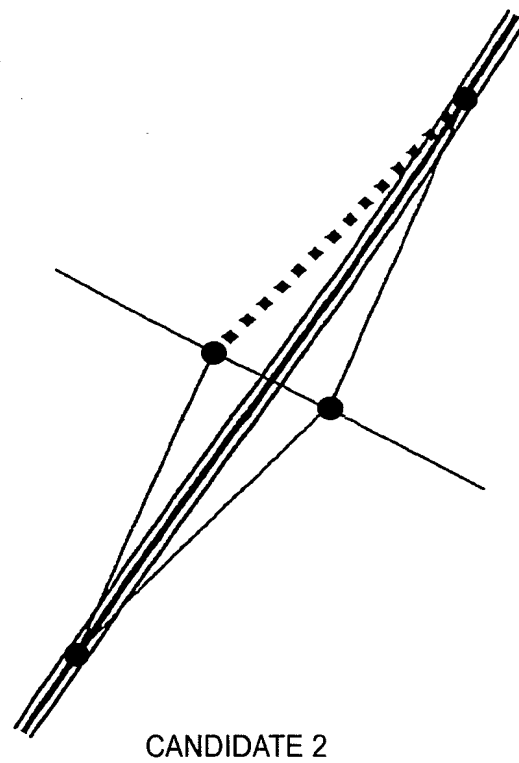


FIG. 7A

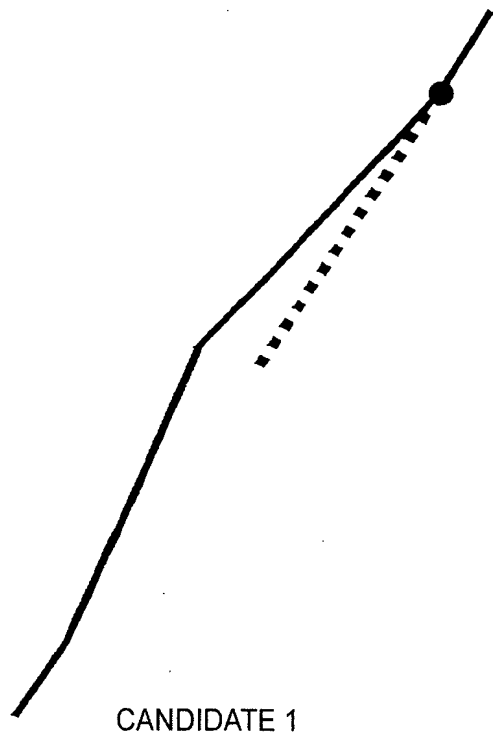


FIG. 7B

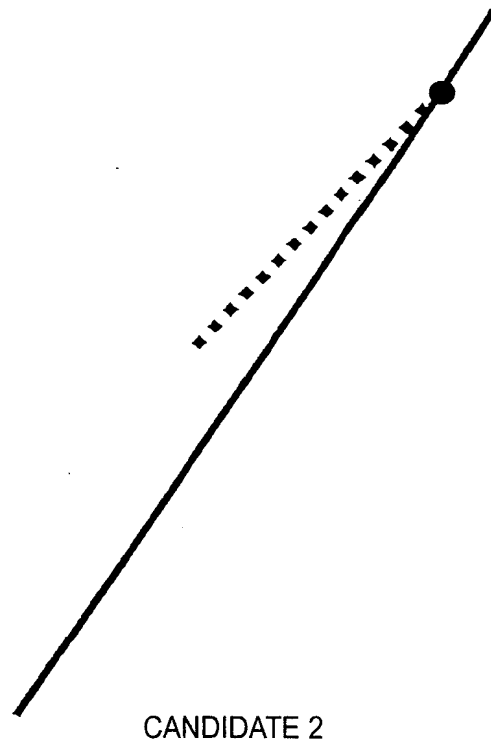


FIG. 8C

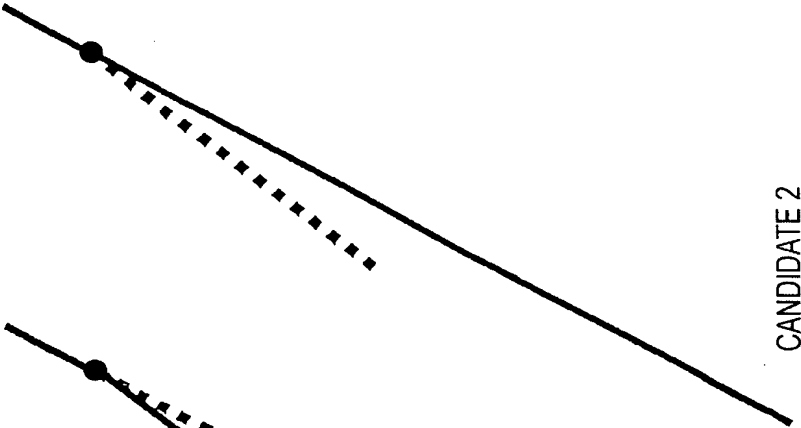


FIG. 8B

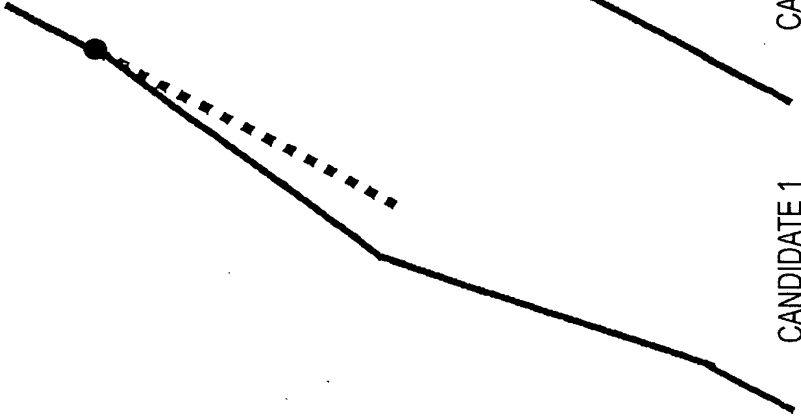


FIG. 8A

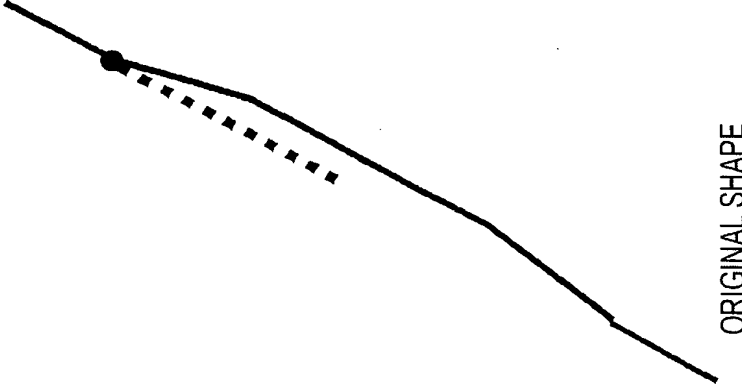


FIG. 9A

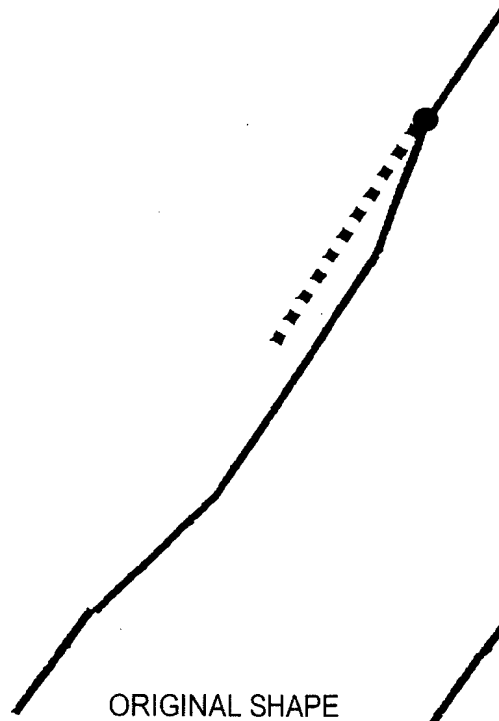


FIG. 9B

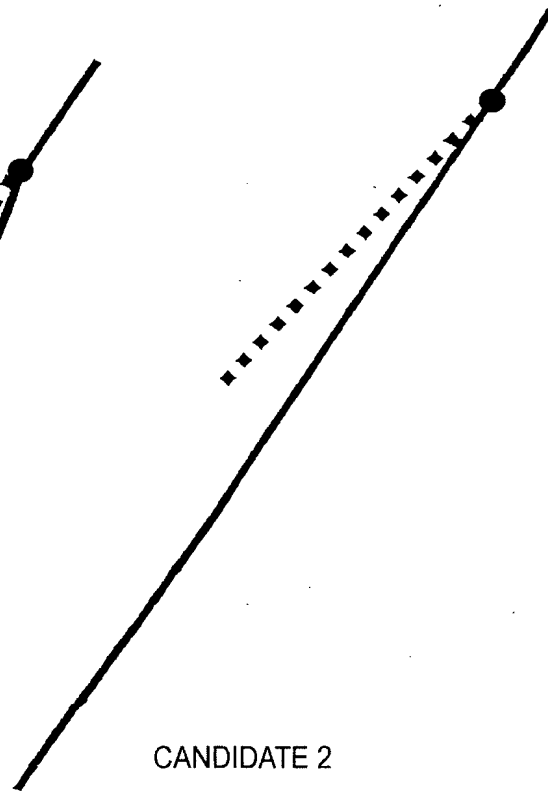
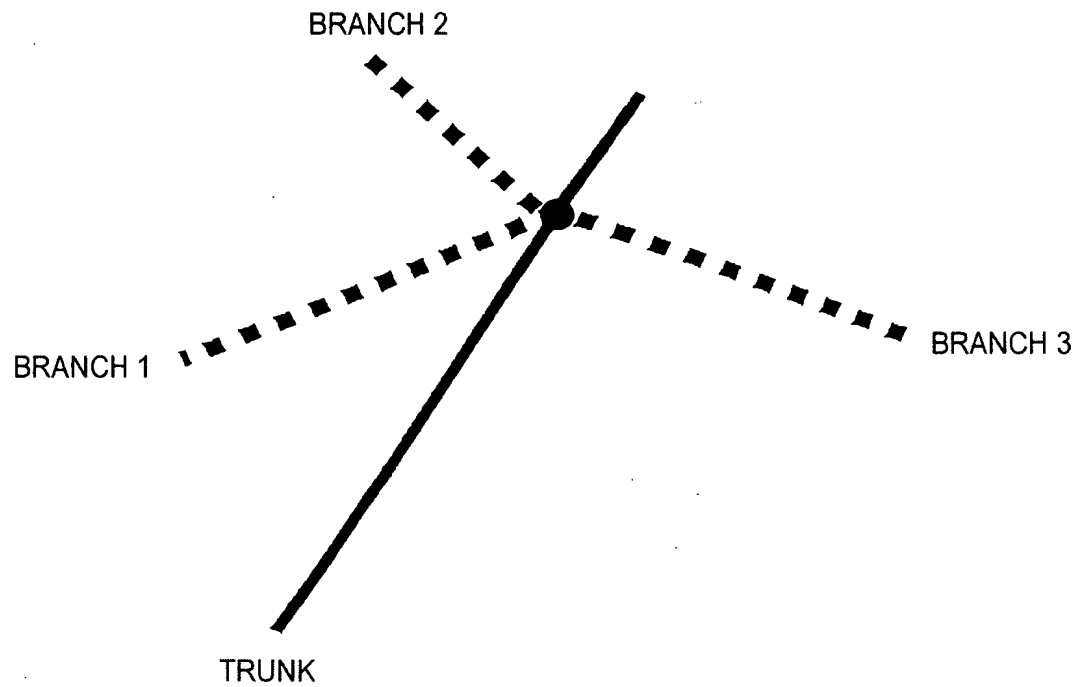


FIG. 10



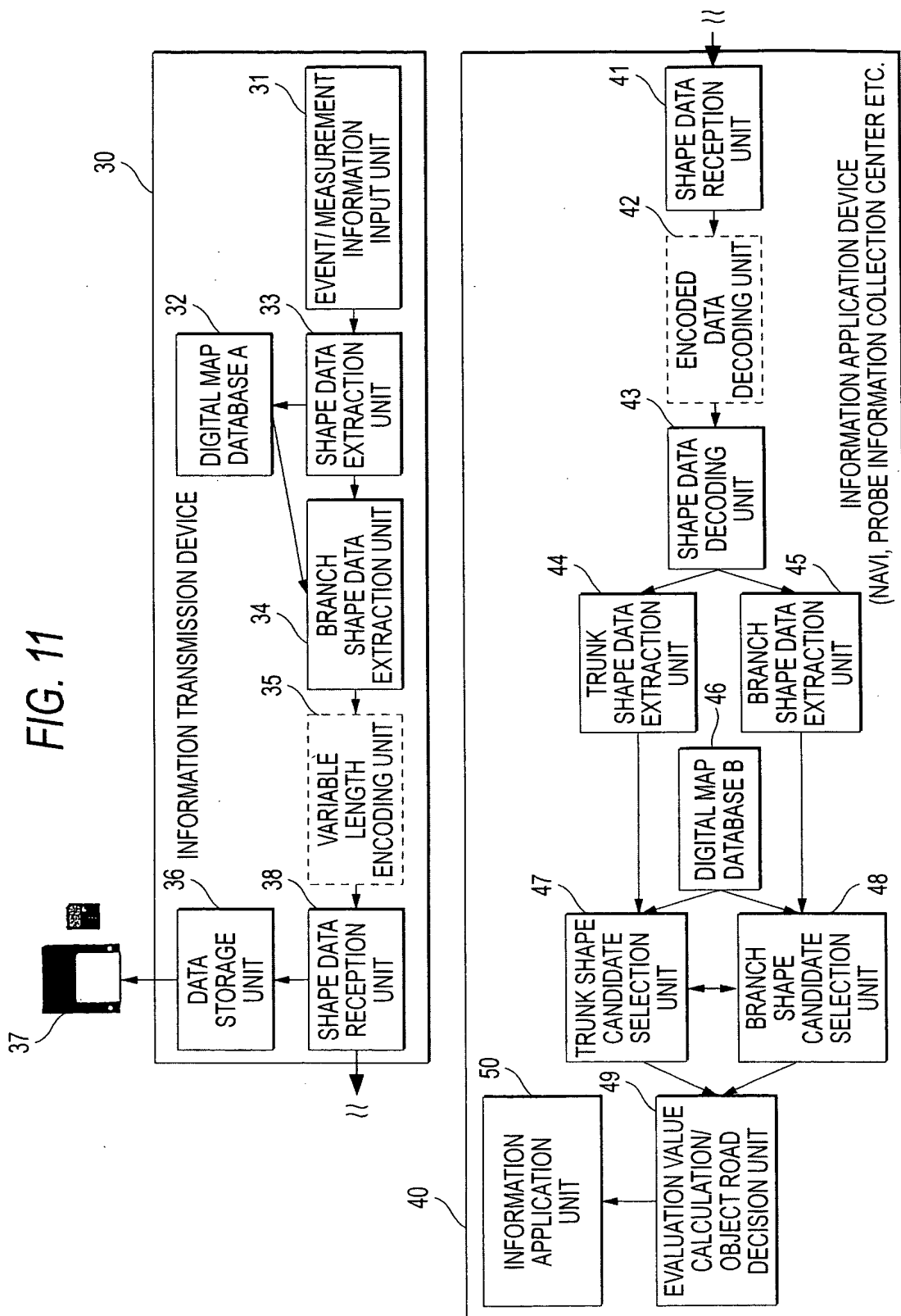


FIG. 12

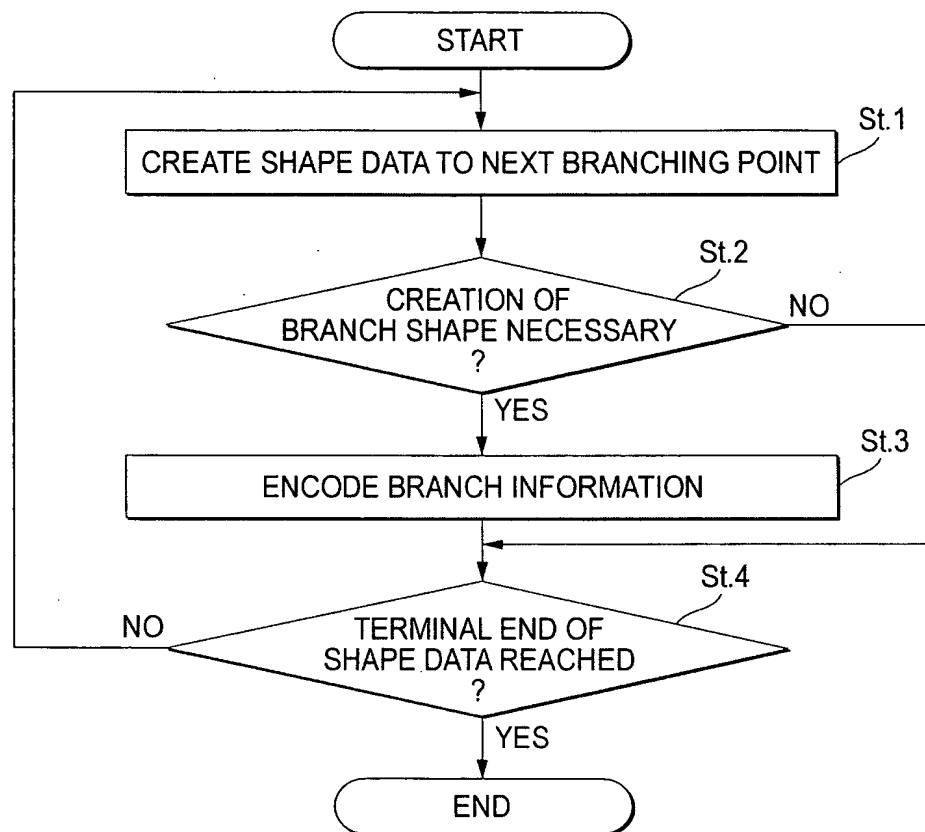


FIG. 13

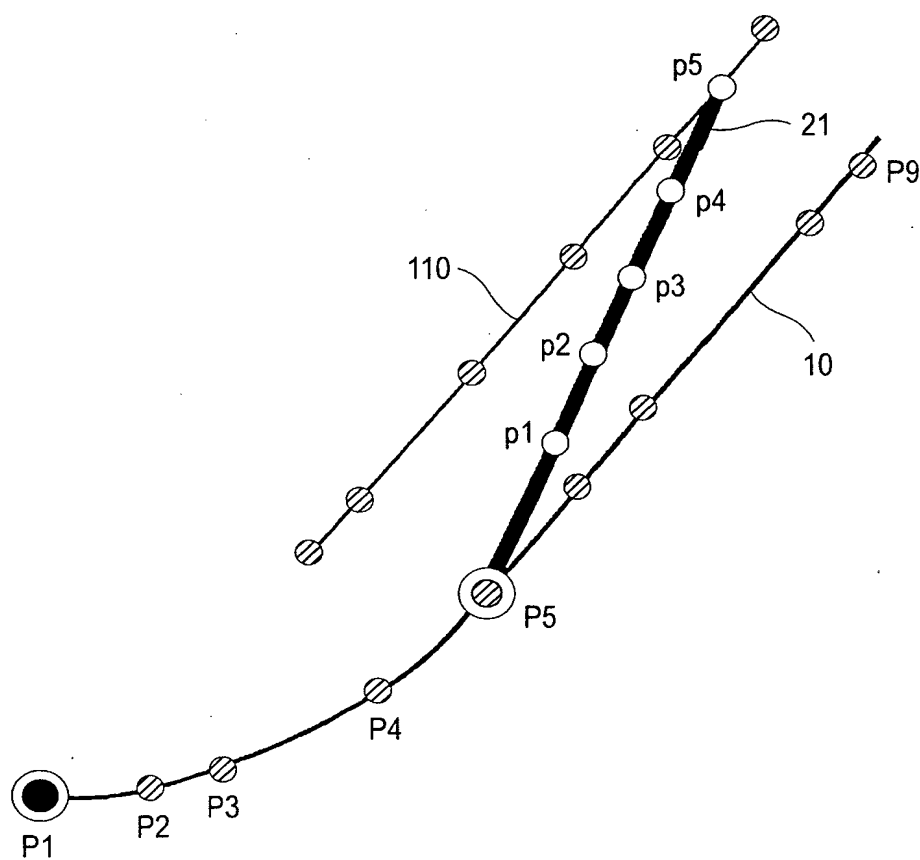


FIG. 14

VECTOR DATA TYPE: (= ROAD)	
SHAPE DATA NO.: (#1)	
DISCRIMINATION OF TRUNK/BRANCH: (TRUNK)	
TOTAL OF NODES: 9	
ABSOLUTE COORDINATES OF NODE 1 IN X DIRECTION: (LONGITUDE)	
ABSOLUTE COORDINATES OF NODE 1 IN Y DIRECTION: (LATITUDE)	
RELATIVE COORDINATES OF NODE 2 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 2 IN Y DIRECTION	
}	
RELATIVE COORDINATES OF NODE 9 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 9 IN Y DIRECTION	
SHAPE DATA NO.: (#2)	
DISCRIMINATION OF TRUNK/BRANCH: (BRANCH)	
REFERENCE SHAPE DATA NO.: (#1)	
NODE NO. FROM STARTING END OF SHAPE DATA REFERRED: 5	
TOTAL OF NODES: 5	
RELATIVE COORDINATES OF NODE 1 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 1 IN Y DIRECTION	
}	
RELATIVE COORDINATES OF NODE 5 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 5 IN Y DIRECTION	

REFERENCE
ROAD
SHAPE DATA:
(TRUNK)

BRANCH
SHAPE
DATA

FIG. 15

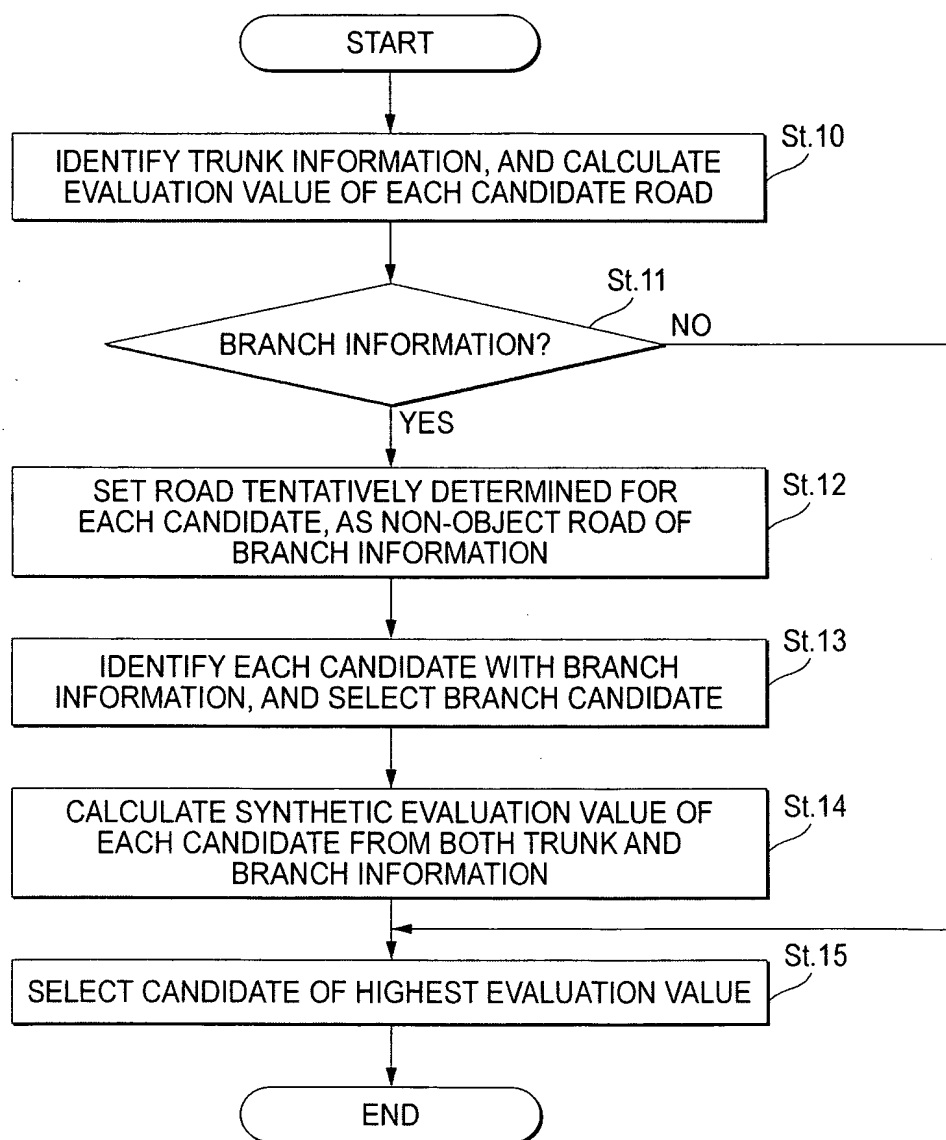
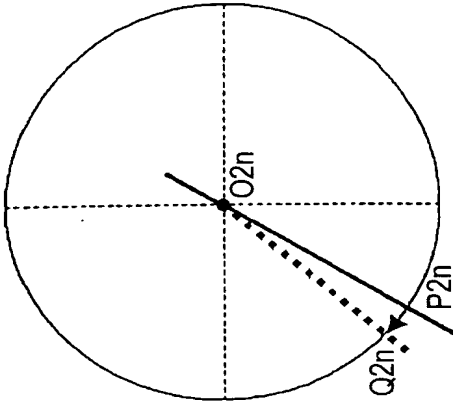
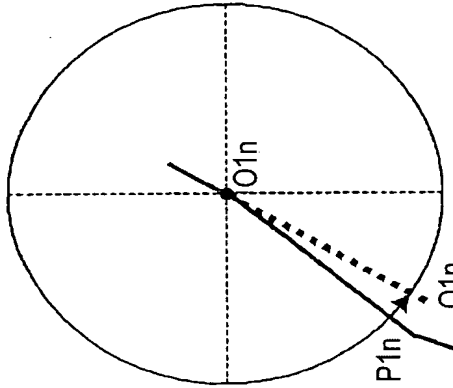


FIG. 16C



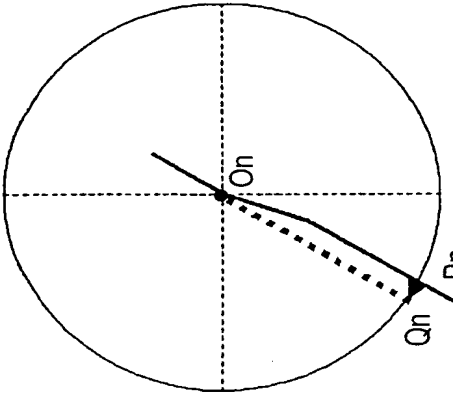
CANDIDATE 2

FIG. 16B



CANDIDATE 1

FIG. 16A



ORIGINAL SHAPE

FIG. 17B

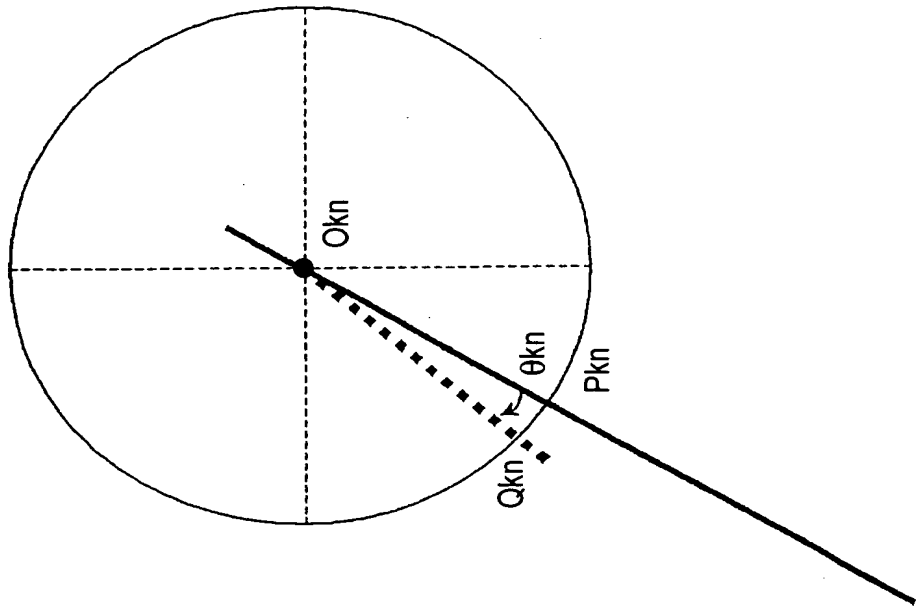


FIG. 17A

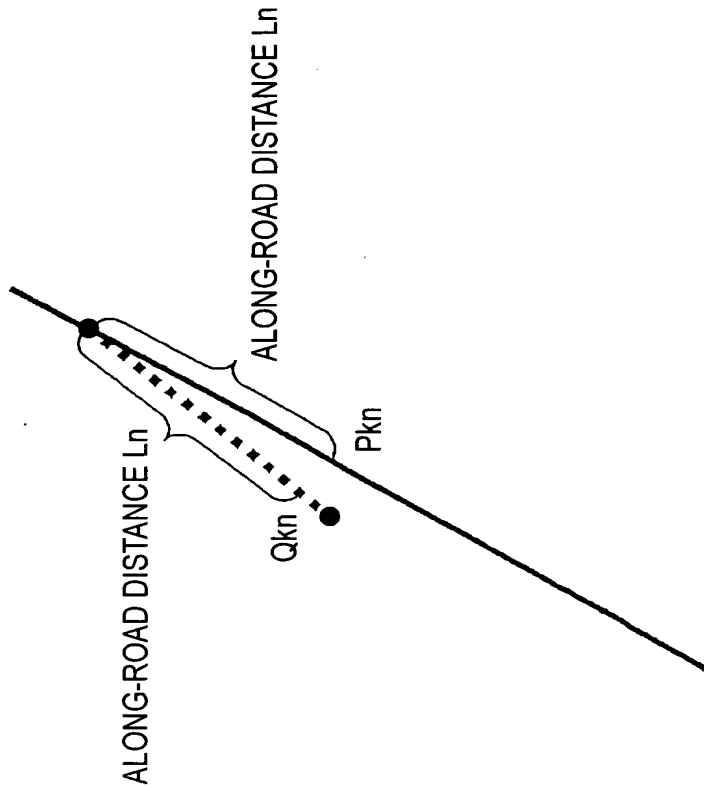
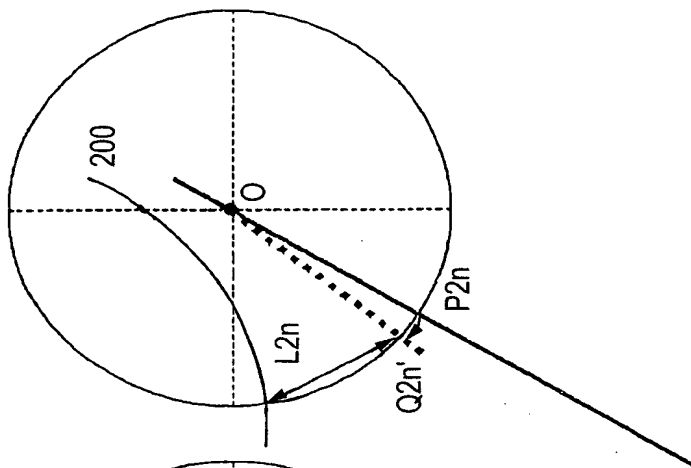
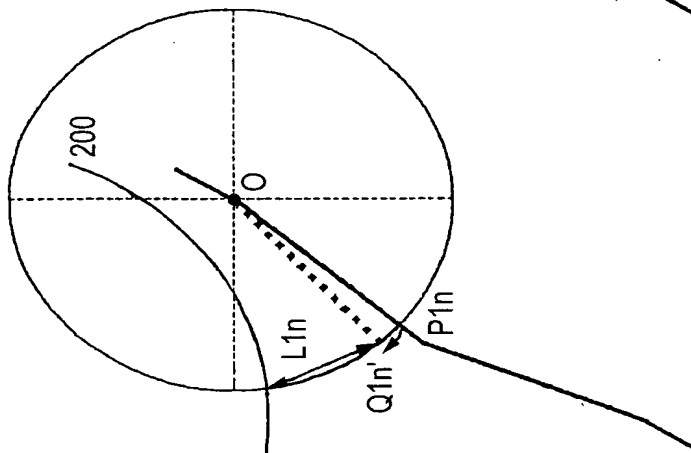


FIG. 18C



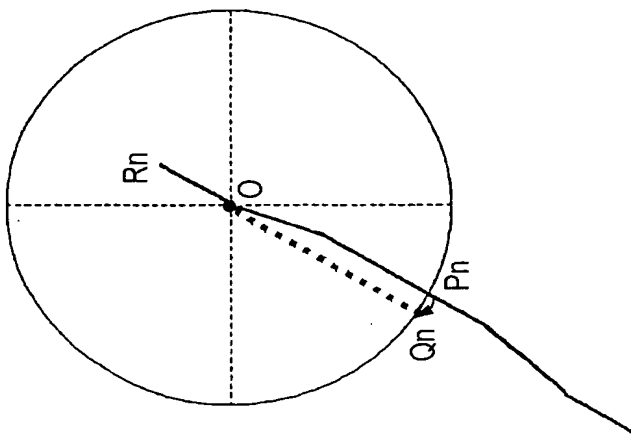
CANDIDATE 2

FIG. 18B



CANDIDATE 1

FIG. 18A



ORIGINAL SHAPE

FIG. 19A

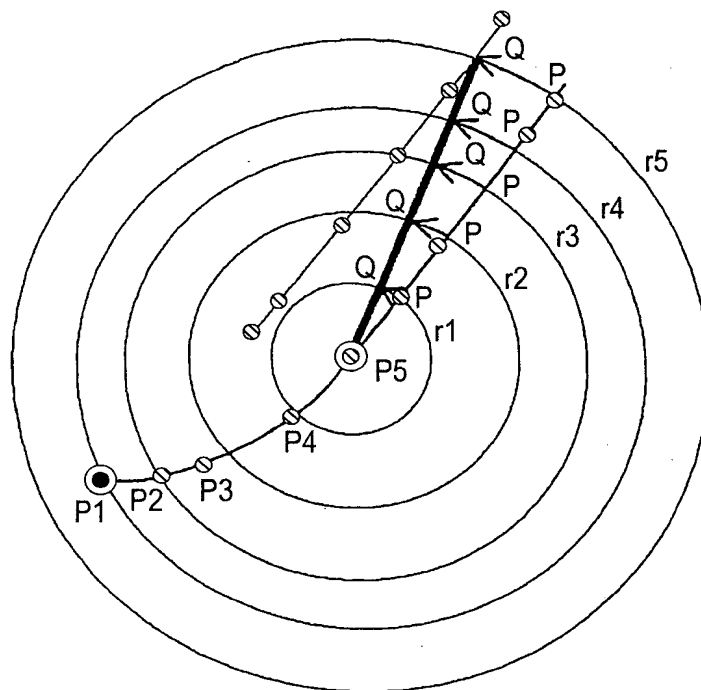


FIG. 19B

VECTOR DATA TYPE (= ROAD)	
SHAPE DATA NO.: (#1)	
DISCRIMINATION OF BRANCH INFORMATION: YES	
TOTAL OF NODES: 9	
ABSOLUTE COORDINATES OF NODE 1 IN X DIRECTION: (LONGITUDE)	
ABSOLUTE COORDINATES OF NODE 1 IN Y DIRECTION: (LATITUDE)	
RELATIVE COORDINATES OF NODE 2 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 2 IN Y DIRECTION	
}	
RELATIVE COORDINATES OF NODE 9 IN Y DIRECTION	
NUMBER OF NODES WITH BRANCH INFORMATION: 1	
OBJECT NODE L NO.: 5	
BRANCH NUMBER OF NODE L: 1	NUMBER OF RADII: 5
RADIUS: r1	
VECTOR OF BRANCH ROAD 1: PQ	
RADIUS: r2	
VECTOR OF BRANCH ROAD 1: PQ	
}	
RADIUS: r5	
VECTOR OF BRANCH ROAD 1: PQ	

SHAPE DATA OF TRUNK

SHAPE DATA OF BRANCH

FIG. 20A

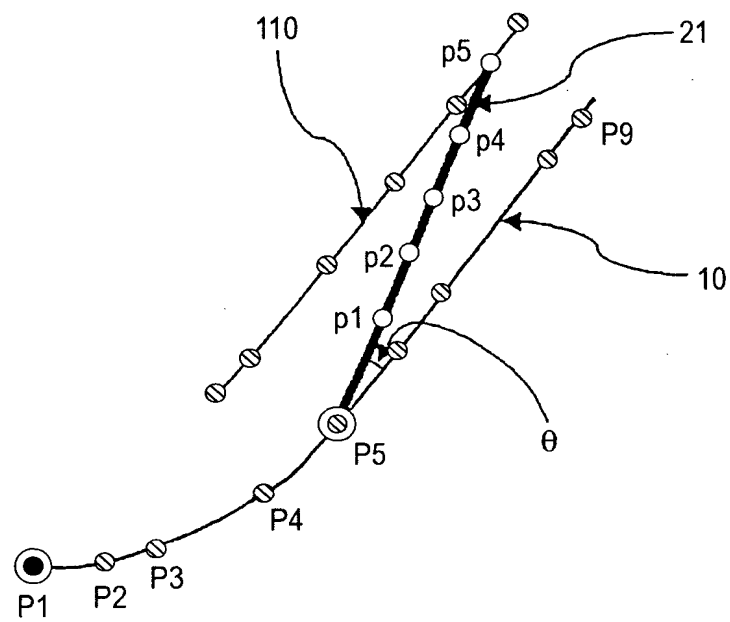


FIG. 20B

VECTOR DATA TYPE: (= ROAD)	
SHAPE DATA NO.: (#1)	
DISCRIMINATION OF TRUNK/BRANCH: (TRUNK)	
TOTAL OF NODES: 9	
ABSOLUTE COORDINATES OF NODE 1 IN X DIRECTION: (LONGITUDE)	
ABSOLUTE COORDINATES OF NODE 1 IN Y DIRECTION: (LATITUDE)	
RELATIVE COORDINATES OF NODE 2 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 2 IN Y DIRECTION	
RELATIVE COORDINATES OF NODE 9 IN X DIRECTION	
RELATIVE COORDINATES OF NODE 9 IN Y DIRECTION	
SHAPE DATA NO.: (#2)	
DISCRIMINATION OF TRUNK/BRANCH: (BRANCH)	
SHAPE DATA NO. REFERRED: (#1)	
NODE NO. FROM STARTING END OF SHAPE DATA REFERRED: 5	
TOTAL NUMBER OF NODES: 5	
ANGULAR DIFFERENCE FROM TRUNK SHAPE AZIMUTH OF ONE NODE: θ	
DISTANCE OF NODE 1	
DEFLECTION ANGLE OF NODE 2	
DISTANCE OF NODE 2	
DEFLECTION ANGLE OF NODE 5	
DISTANCE OF NODE 5	

ROAD SHAPE
DATA
REFERRED:
(TRUNK)

BRANCH
SHAPE
DATA

FIG. 21C

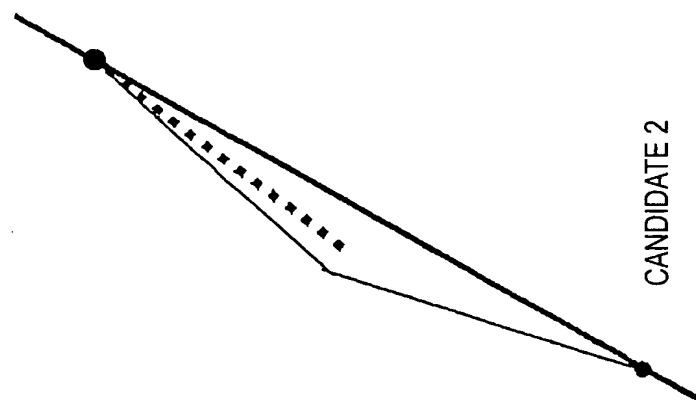


FIG. 21B

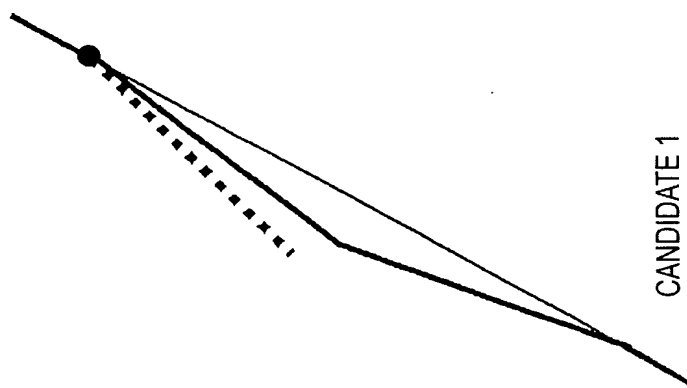


FIG. 21A

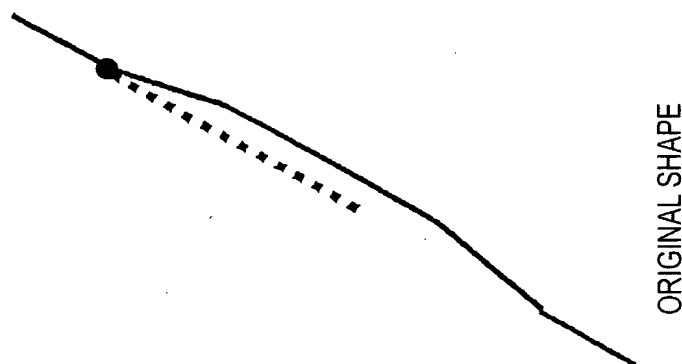


FIG. 22A

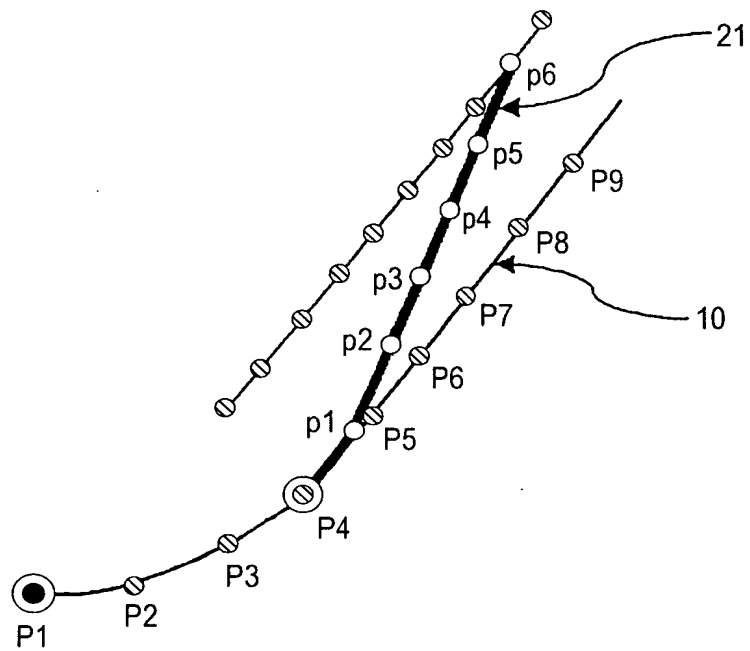
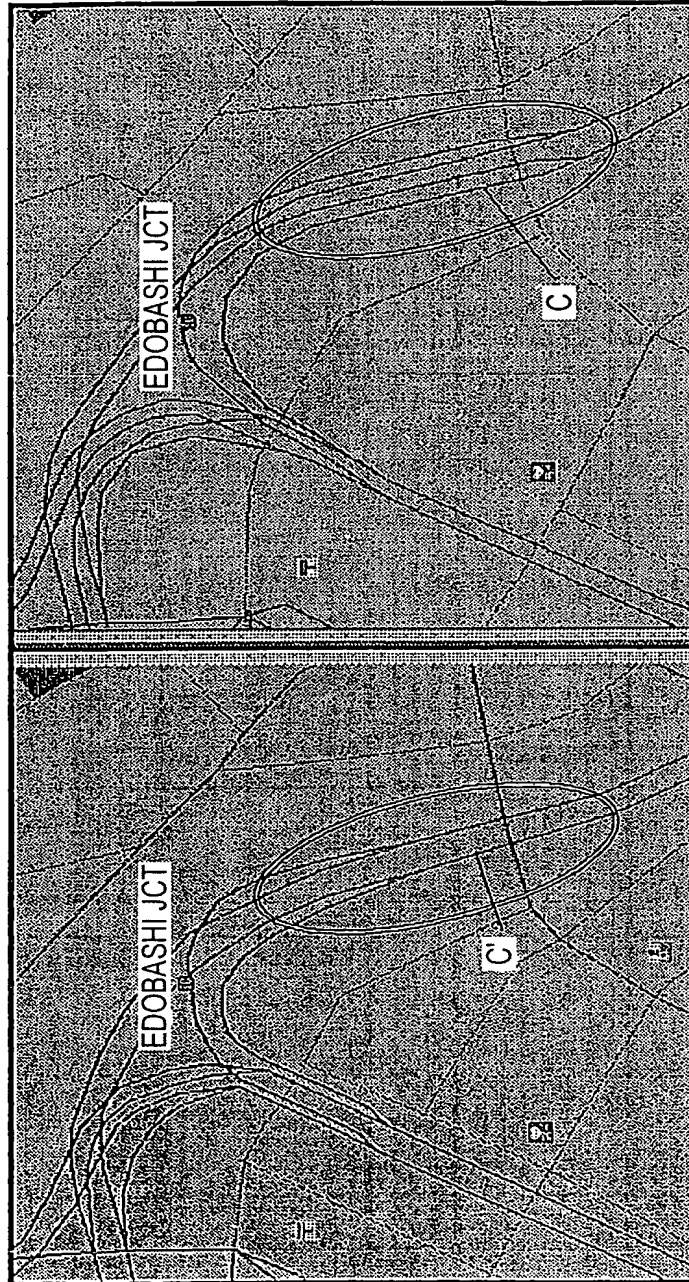


FIG. 22B

VECTOR DATA TYPE: (= ROAD)	
SHAPE DATA NO.: (#1)	
DISCRIMINATION OF TRUNK/BRANCH: (TRUNK)	
ENCODING METHOD/PARAMETERS	
SAMPLE SECTION LENGTH: L1 (m)	
TOTAL NUMBER OF NODES: 9	
ABSOLUTE COORDINATES OF NODE 1 IN X DIRECTION: (LONGITUDE)	REFERENCE ROAD SHAPE DATA: (TRUNK)
ABSOLUTE COORDINATES OF NODE 1 IN Y DIRECTION: (LATITUDE)	
ABSOLUTE AZIMUTH BETWEEN NODE 1 ? 2	
ENCODED DATA OF SHAPE (ENCODED BIT STRING OF DEFLECTION ANGLE θ_j OR DIFFERENTIAL VALUE $\Delta\theta_j$ OF STATISTICAL PREDICTED VALUE)	
SHAPE DATA NO.: (#2)	
DISCRIMINATION OF TRUNK/BRANCH: (BRANCH)	
SHAPE DATA NO. REFERRED: (#1)	
ENCODING METHOD/PARAMETERS	
SAMPLE SECTION LENGTH: L2 (m)	
NODE NO. FROM STARTING END OF REFERENCE SHAPE DATA: 4	BRANCH SHAPE DATA
TOTAL NUMBER OF NODES: 6	
DEFLECTION ANGLE θ FROM AZIMUTH OF TRUNK: θ	
DISTANCE FROM REFERENCE NODE TO BRANCH STARTING POSITION	
ENCODED DATA OF SHAPE (ENCODED BIT STRING OF DEFLECTION ANGLE θ_j OR DIFFERENTIAL VALUE $\Delta\theta_j$ OF STATISTICAL PREDICTED VALUE)	

FIG. 23

MAP B



MAP A

FIG. 24

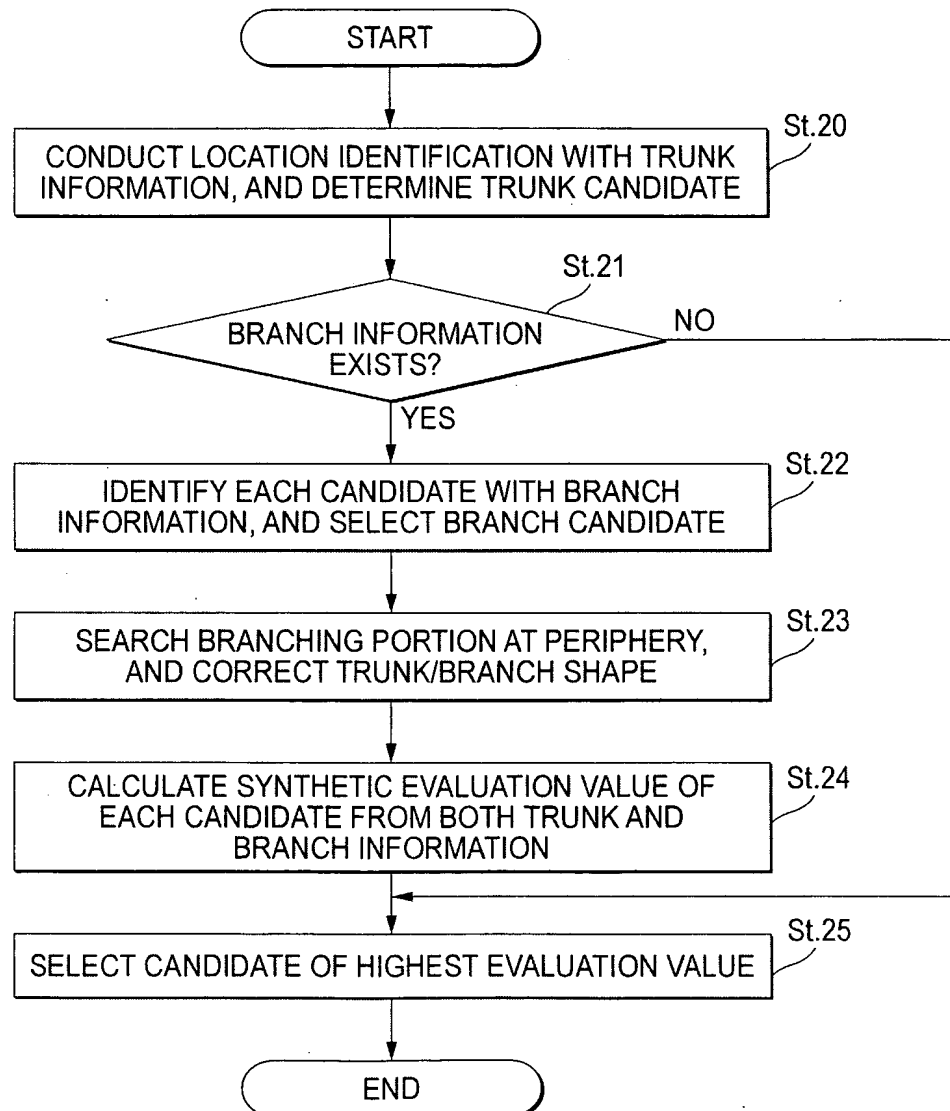


FIG. 25A

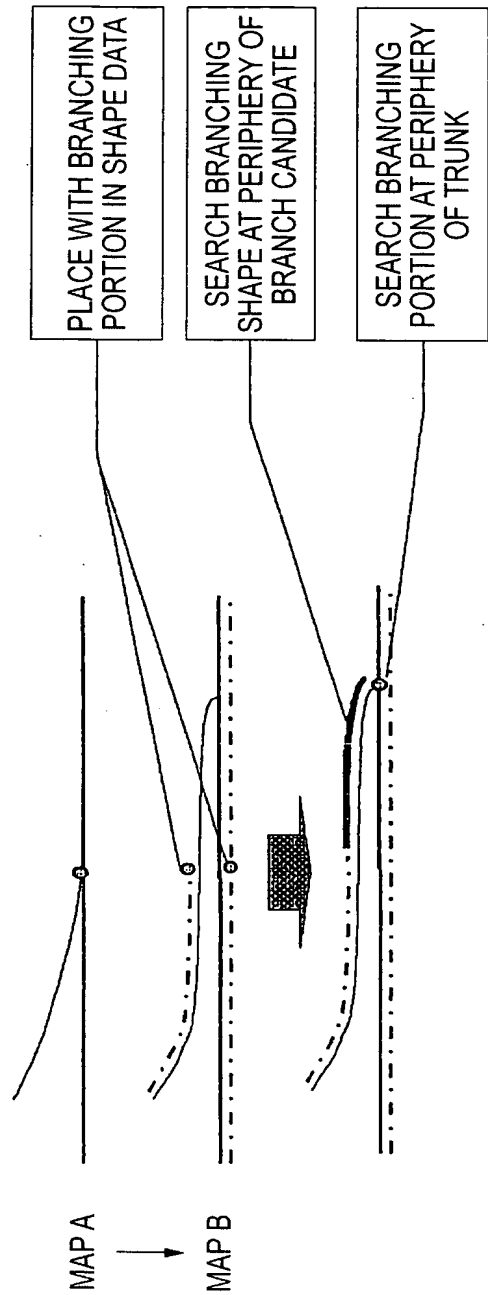


FIG. 25B

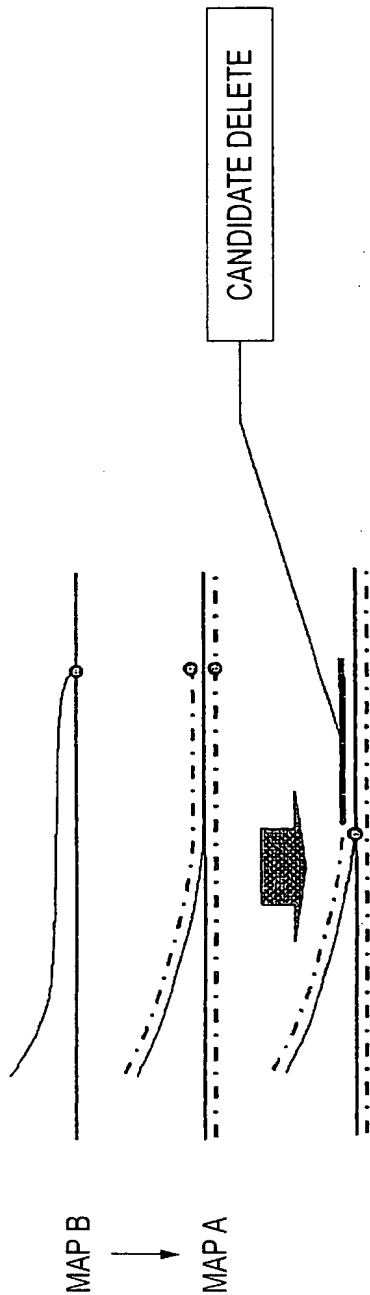
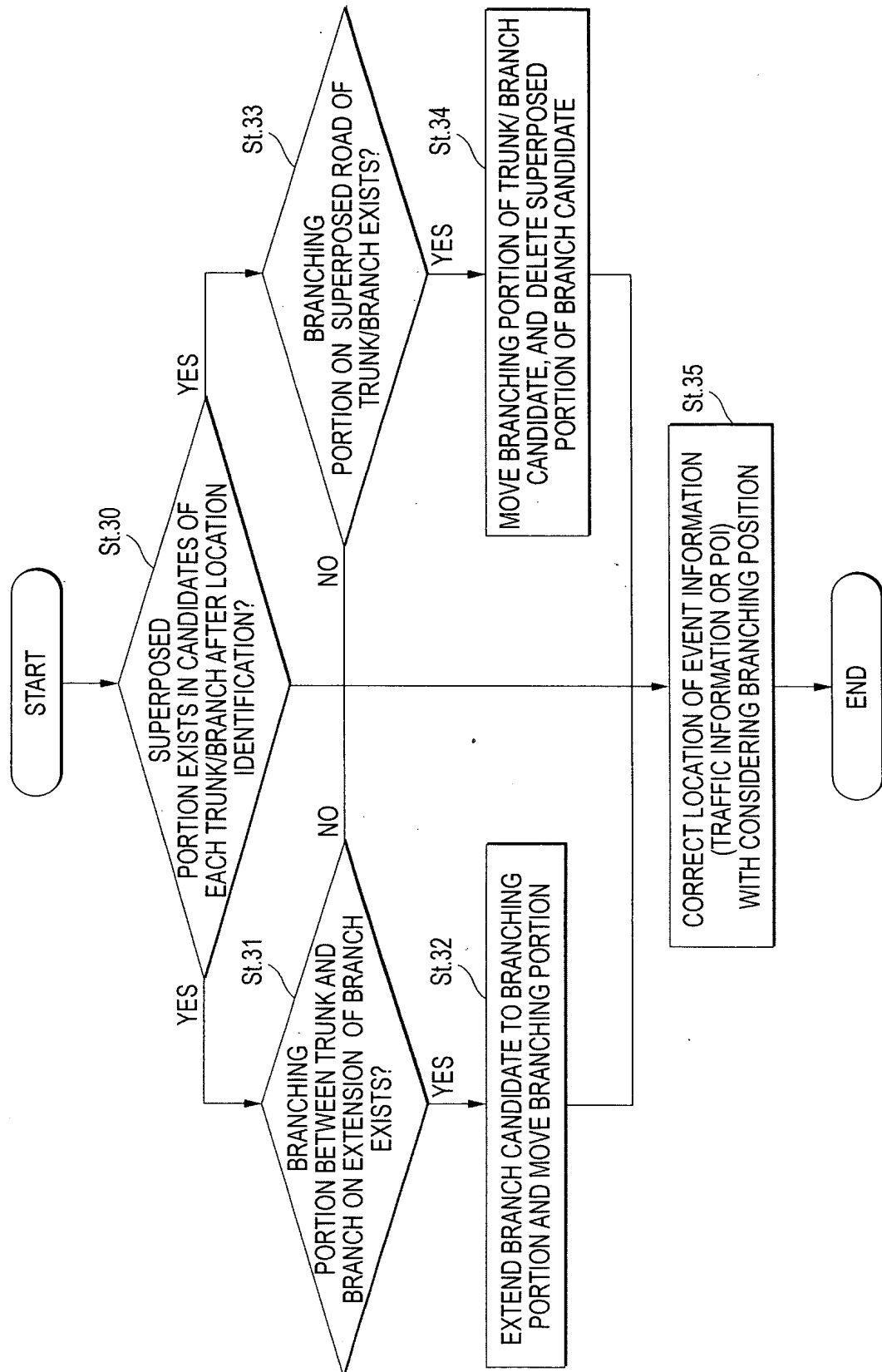


FIG. 26



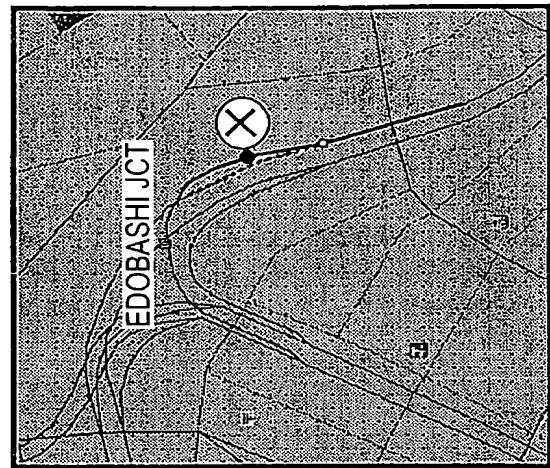
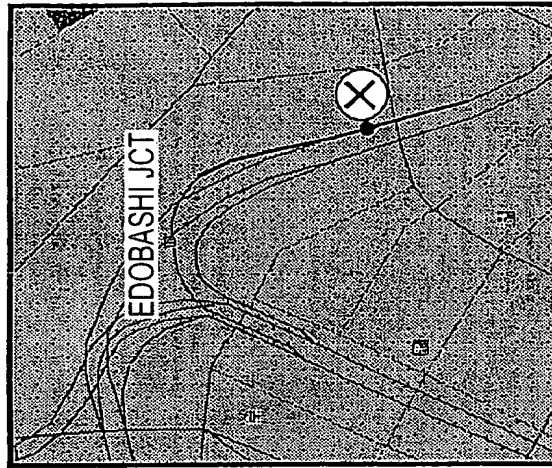
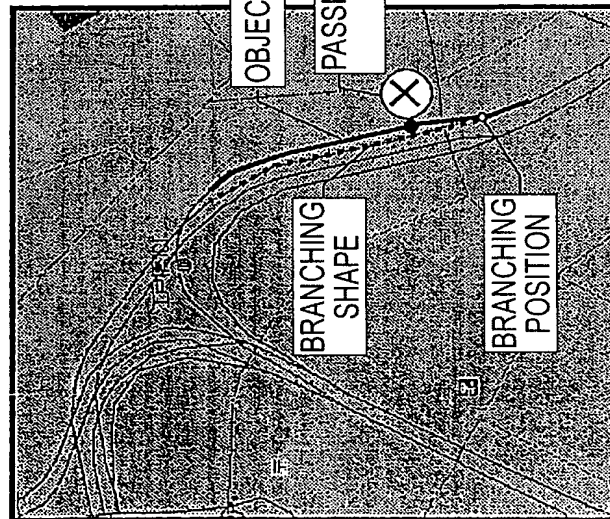


FIG. 27B

FIG. 27C

FIG. 27A



NO BRANCHING
SHAPE OR NO
CORRECTION OF
BRANCHING
POSITION

MAKE
CORRECTION
CONSIDERING
BRANCHING
POSITION

FIG. 28B

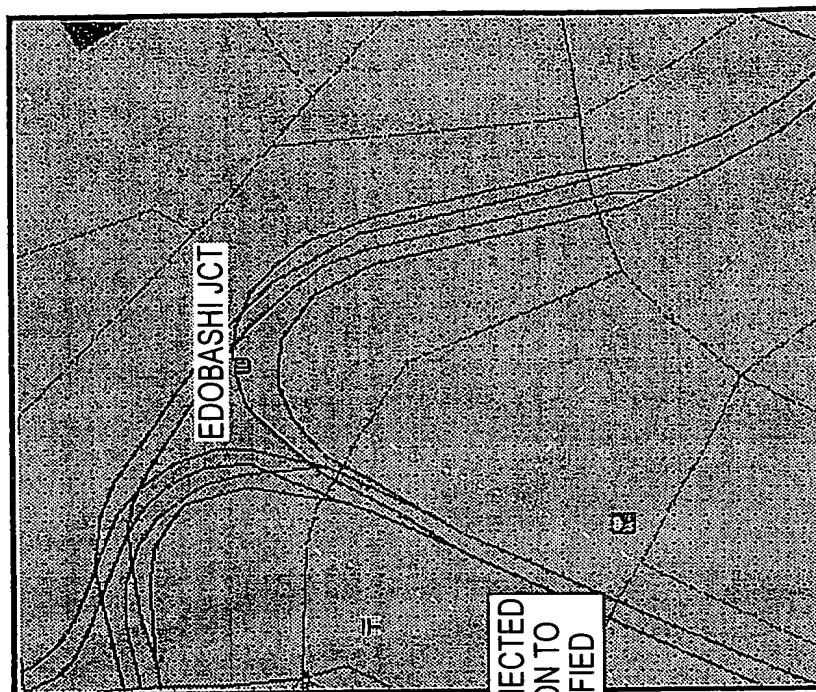


FIG. 28A

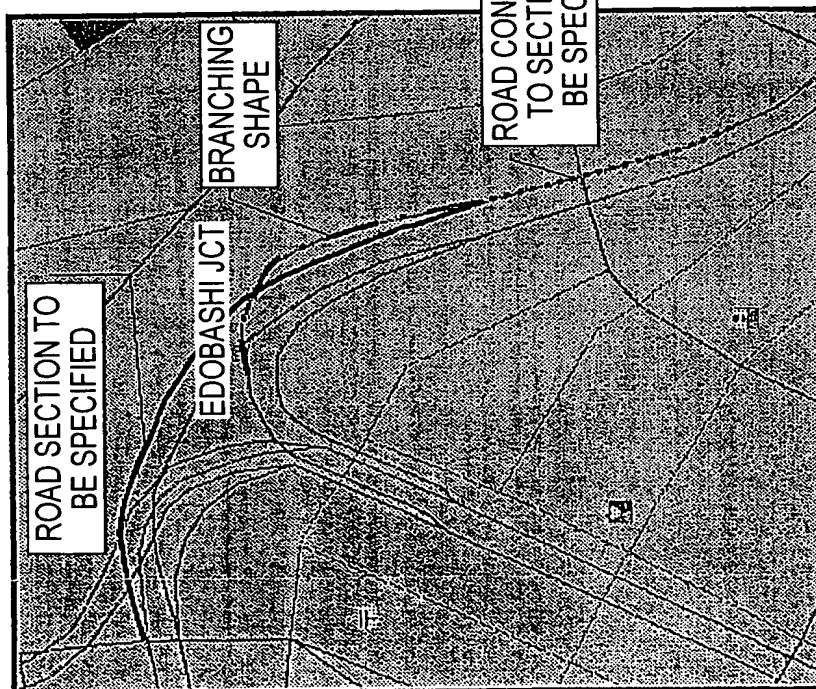


FIG. 29

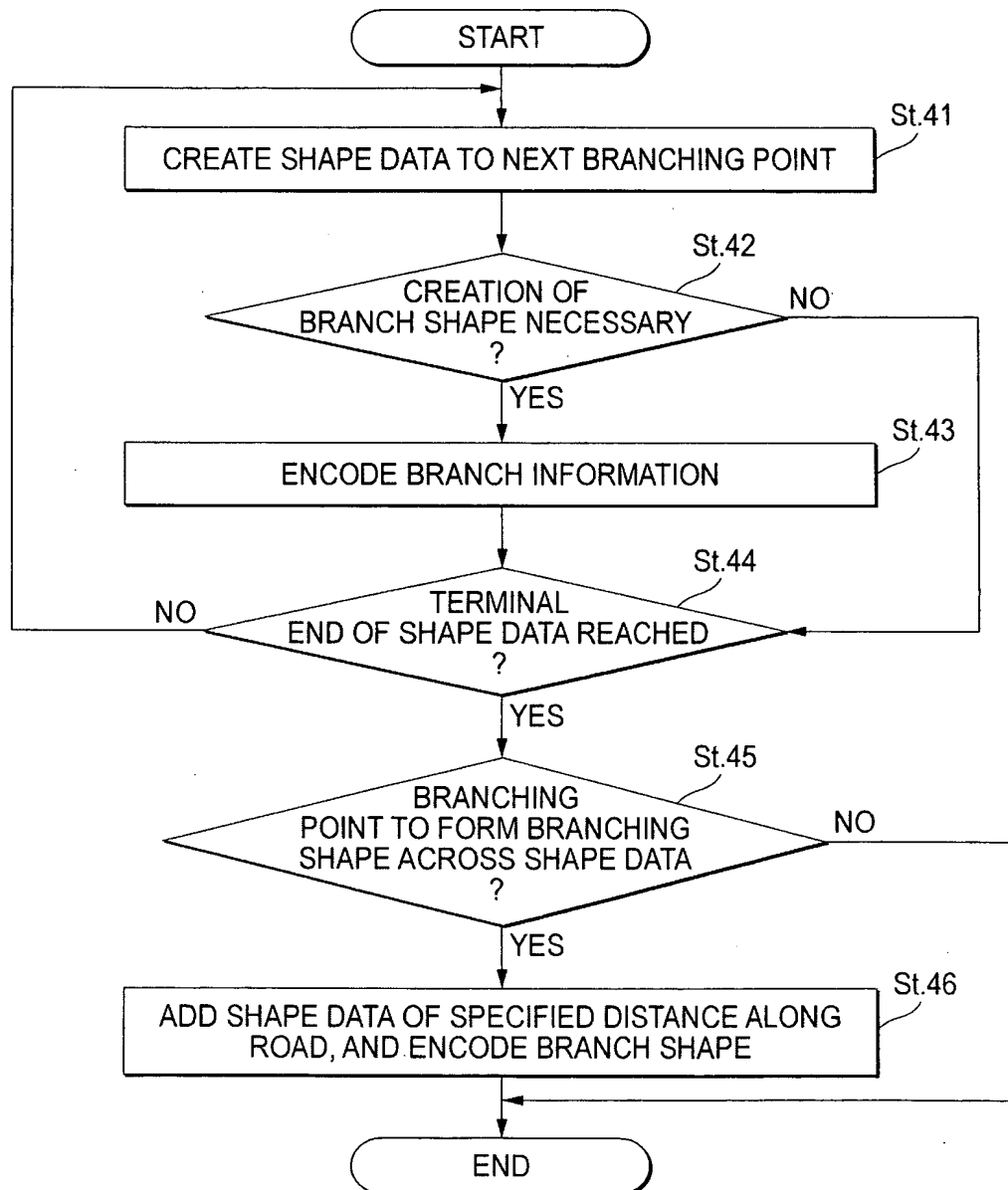


FIG. 30B

SHAPE VECTOR DATA STRING

SHAPE VECTOR SERIES DISCRIMINATION NO. = 1
VECTOR DATA TYPE (= ROAD)
TOTAL NUMBER OF NODES: N
NODE NO.: p1
ABSOLUTE COORDINATES OF NODE p1 IN X DIRECTION: (LONGITUDE)
ABSOLUTE COORDINATES OF NODE p1 IN Y DIRECTION: (LATITUDE)
NODE NO.: p2
RELATIVE COORDINATES OF NODE p2 IN X DIRECTION: (x2)
RELATIVE COORDINATES OF NODE p2 IN Y DIRECTION: (y2)
}
NODE NO.: pN
RELATIVE COORDINATES OF NODE pN IN X DIRECTION: (xN)
RELATIVE COORDINATES OF NODE pN IN Y DIRECTION: (yN)

FIG. 30A

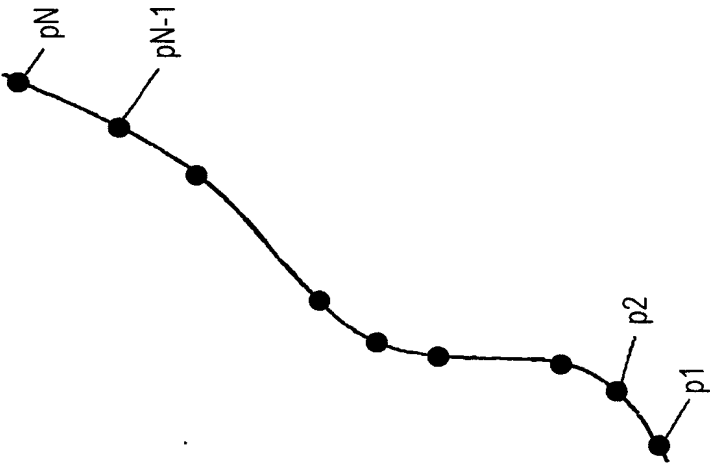


FIG. 31B

ADDITIONAL INFORMATION	
ROAD TYPE CODE	
ROAD NO.	
INTERSECTION INFORMATION: 1	
NODE NO.: p6	
CONNECTION LINK NO. OF NODE p6: 2	
CONNECTION LINK ANGLE OF NODE p6: $\alpha 1$	
CONNECTION LINK ANGLE OF NODE p6: $\alpha 2$	

FIG. 31A

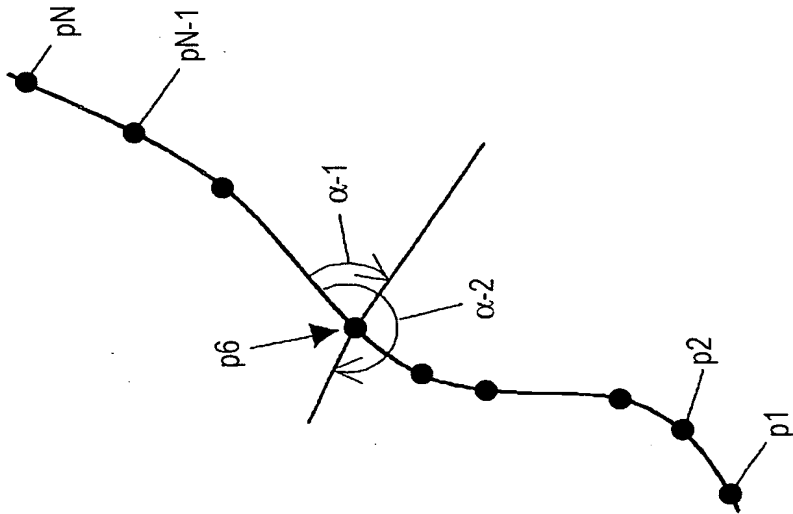


FIG. 32B

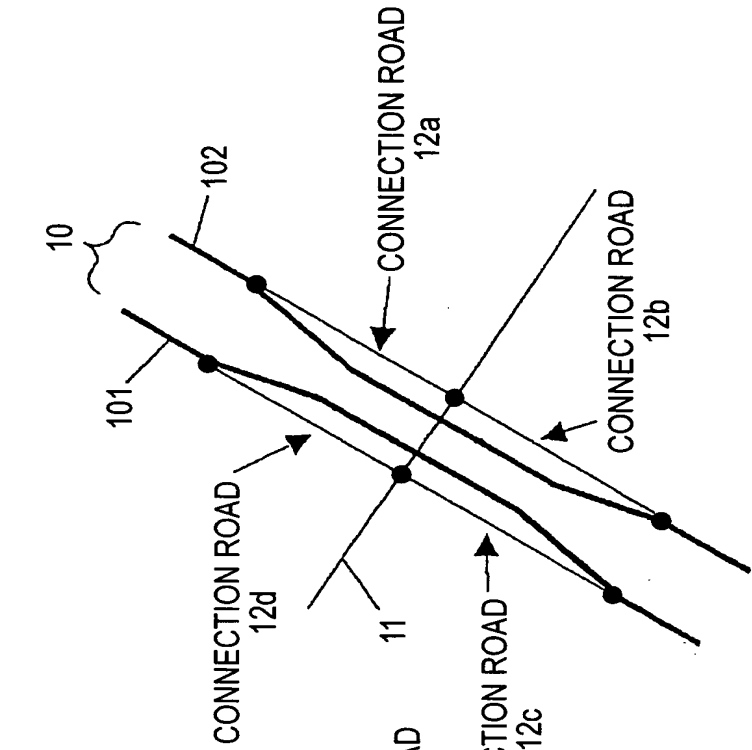


FIG. 32A

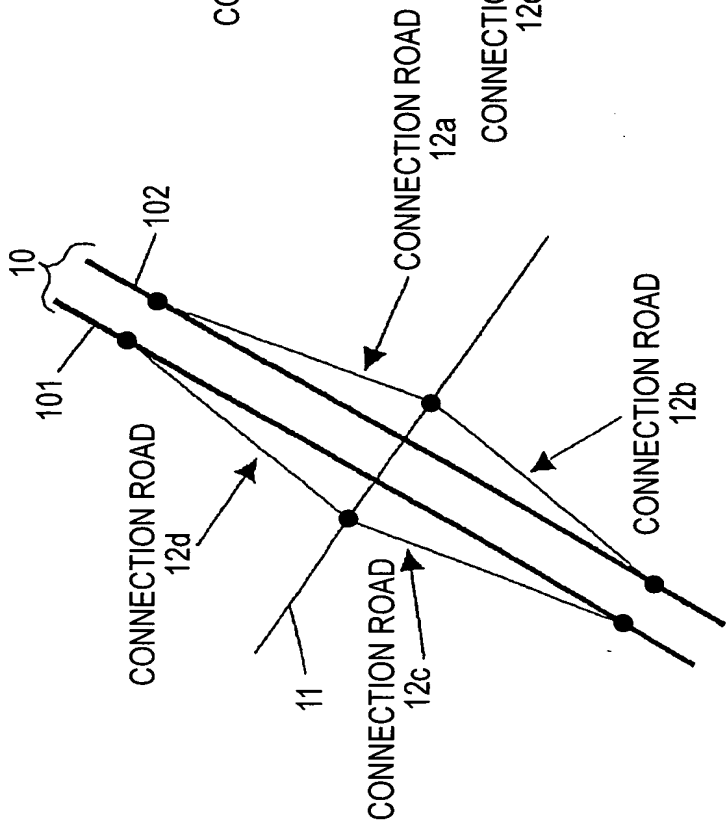


FIG. 33

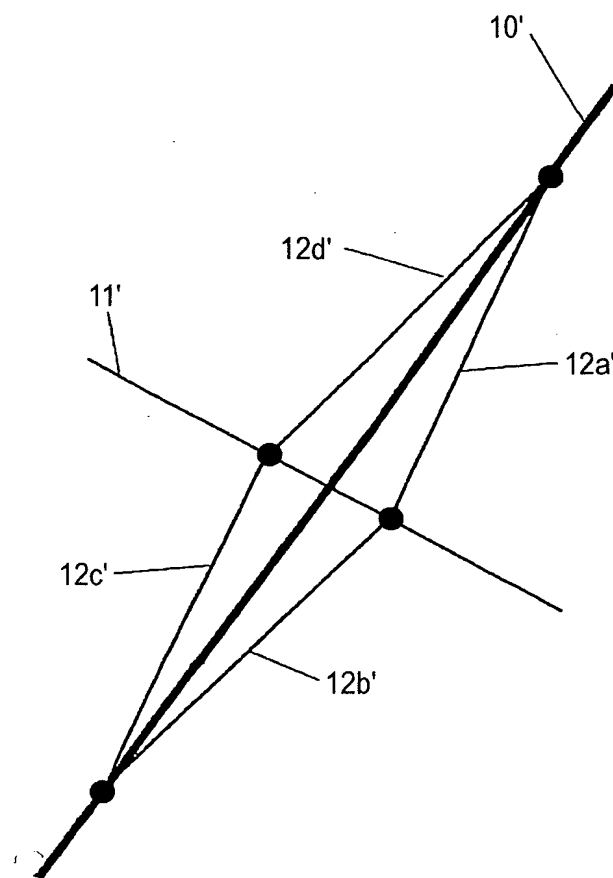


FIG. 34B

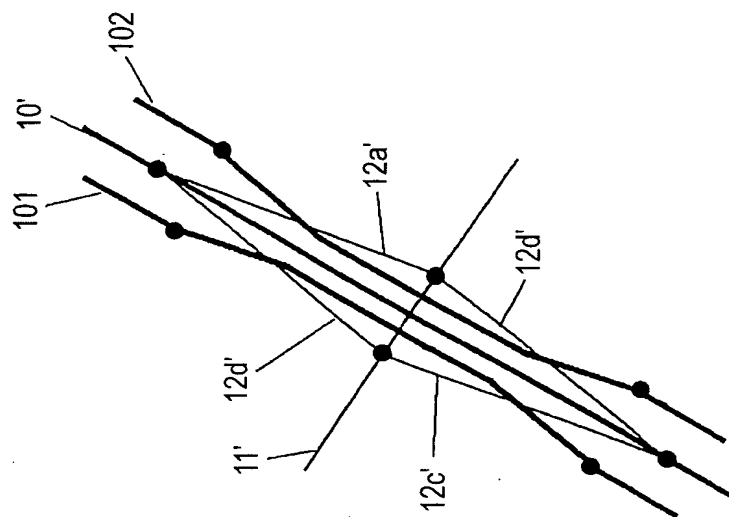


FIG. 34A

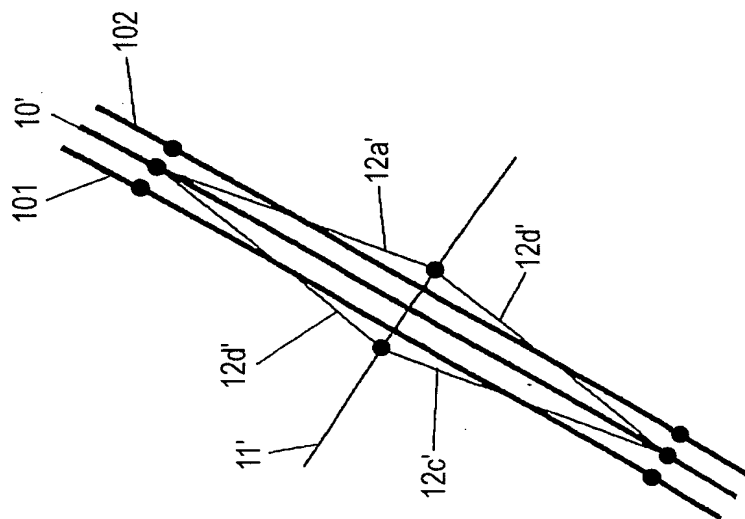


FIG. 35

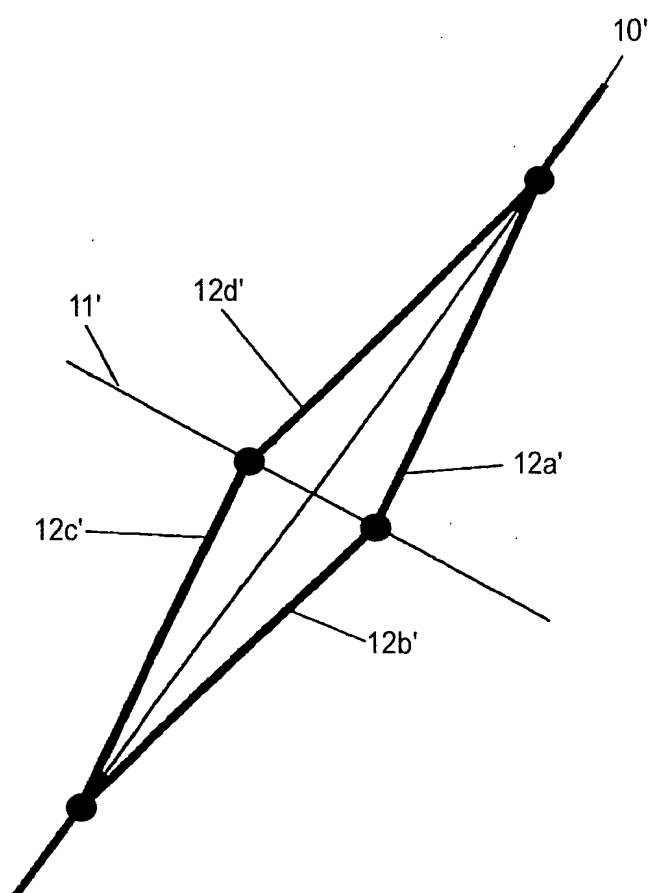


FIG. 36

VECTOR DATA TYPE: (= ROAD)	
}	
SHAPE DATA NO.: (#N)	
DISCRIMINATION OF TRUNK/BRANCH	
TOTAL NUMBER OF NODES	
ATTRIBUTE INFORMATION (ADVANCING DIRECTION ETC.) OF ENTIRE TRUNK SHAPE DATA	
ABSOLUTE COORDINATES OF NODE 1 IN X DIRECTION: (LONGITUDE)	
ABSOLUTE COORDINATES OF NODE 1 IN Y DIRECTION: (LATITUDE)	
ATTRIBUTE INFORMATION OF NODE 1 (TYPE/NO./NAME/ALTITUDE ETC.)	
RELATIVE AZIMUTH OF NODE 2 IN X DIRECTION	
RELATIVE AZIMUTH OF NODE 2 IN Y DIRECTION	
ATTRIBUTE OF NODE 2	
}	
SHAPE DATA NO.: (#N+1)	
DISCRIMINATION OF TRUNK/BRANCH	
REFERENCE SHAPE DATA NO.	
NODE NO. FROM STARTING END OF REFERENCE SHAPE DATA	
TOTAL NUMBER OF NODES	
ATTRIBUTE INFORMATION (ADVANCING DIRECTION ETC.) OF ENTIRE BRANCH SHAPE DATA	
RELATIVE AZIMUTH OF NODE 1 IN X DIRECTION	
RELATIVE AZIMUTH OF NODE 1 IN Y DIRECTION	
ATTRIBUTE INFORMATION OF NODE 1 (TYPE/NO./NAME/ALTITUDE ETC.)	
}	
SHAPE DATA NO.: (#M)	
}	

REFERENCE
ROAD
SHAPE DATA:
(TRUNK)

BRANCH
SHAPE DATA

FIG. 37B

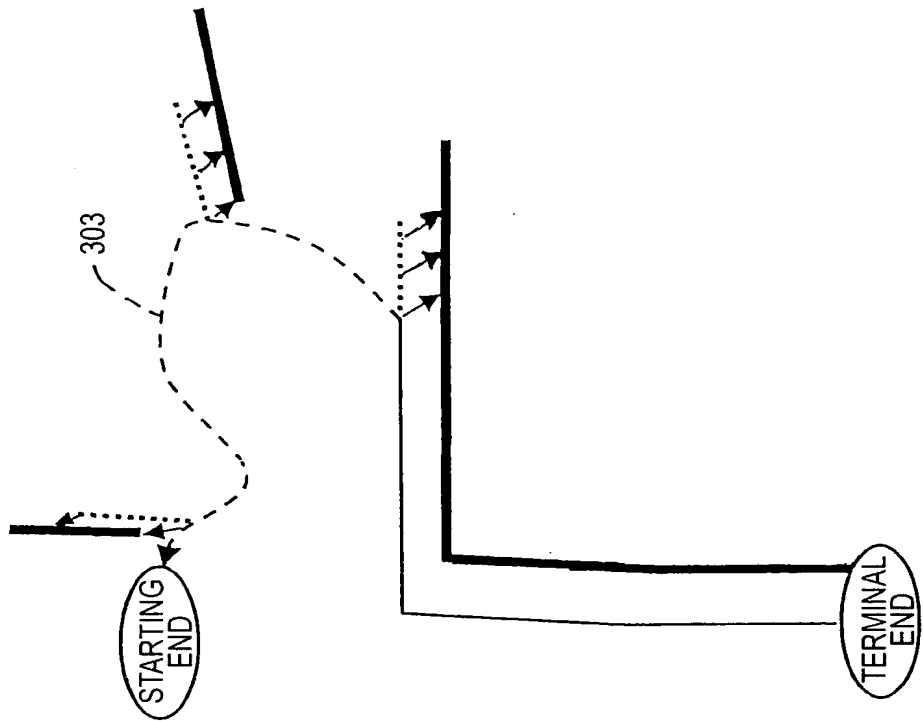


FIG. 37A

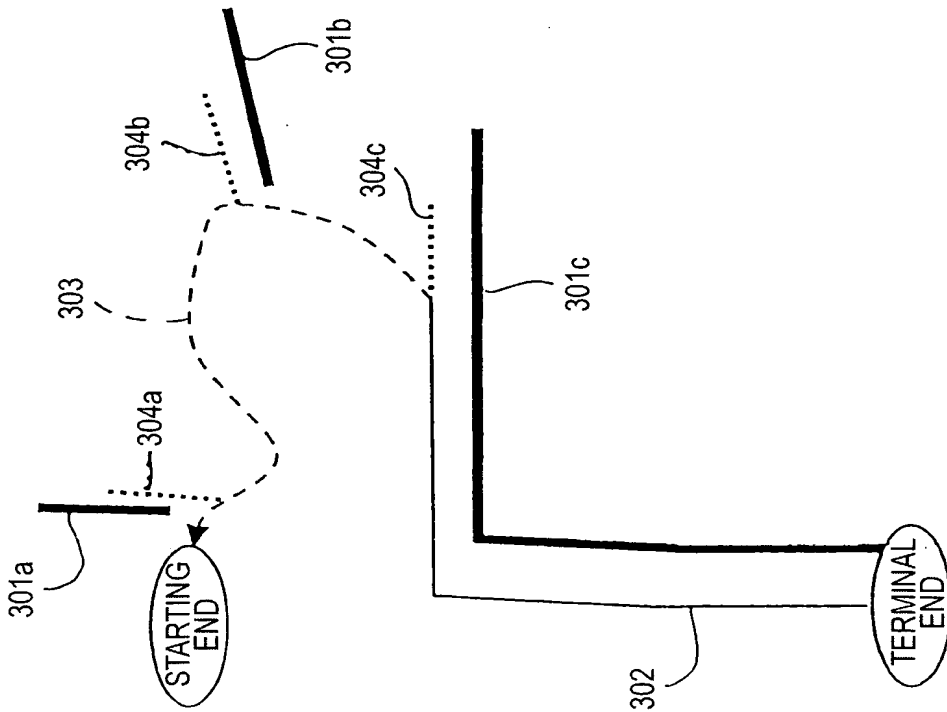


FIG. 38A

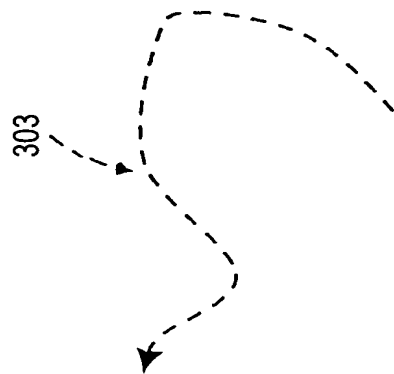
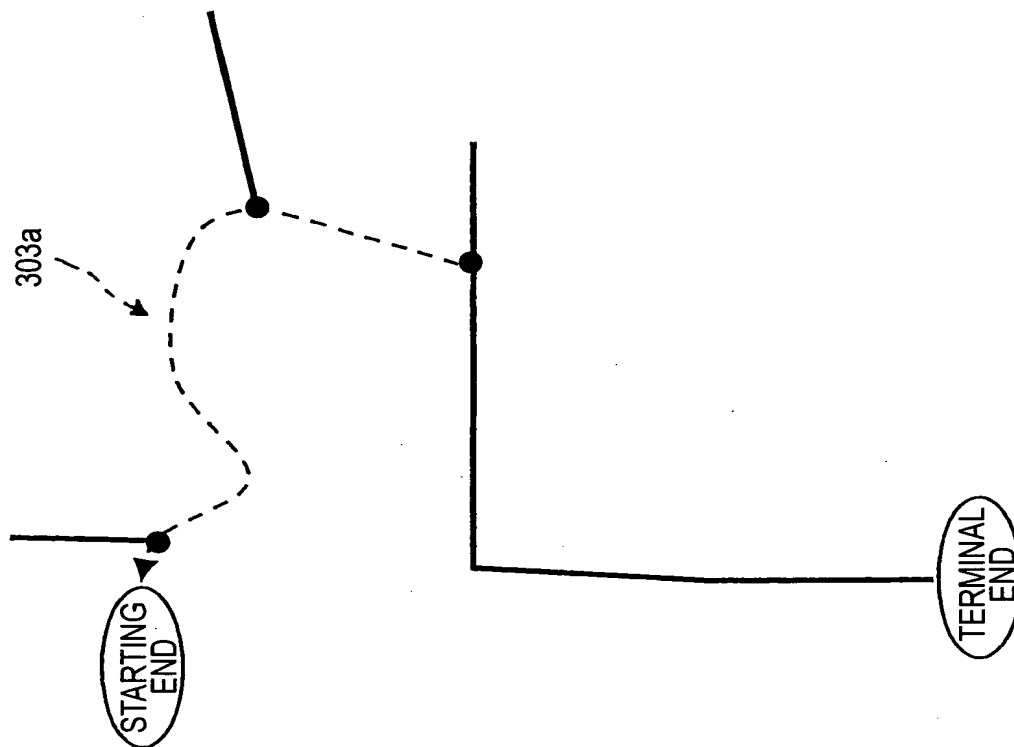


FIG. 38B



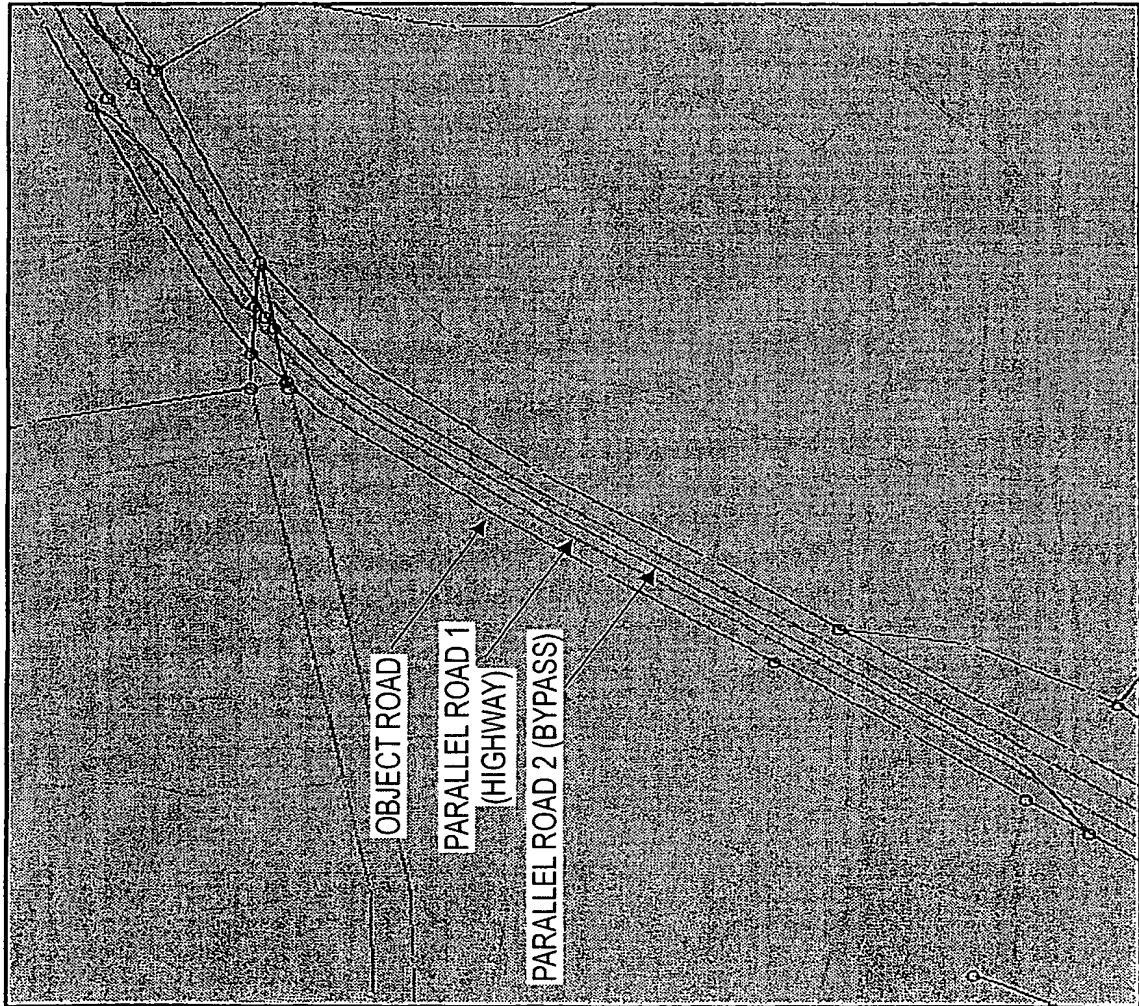


FIG. 39

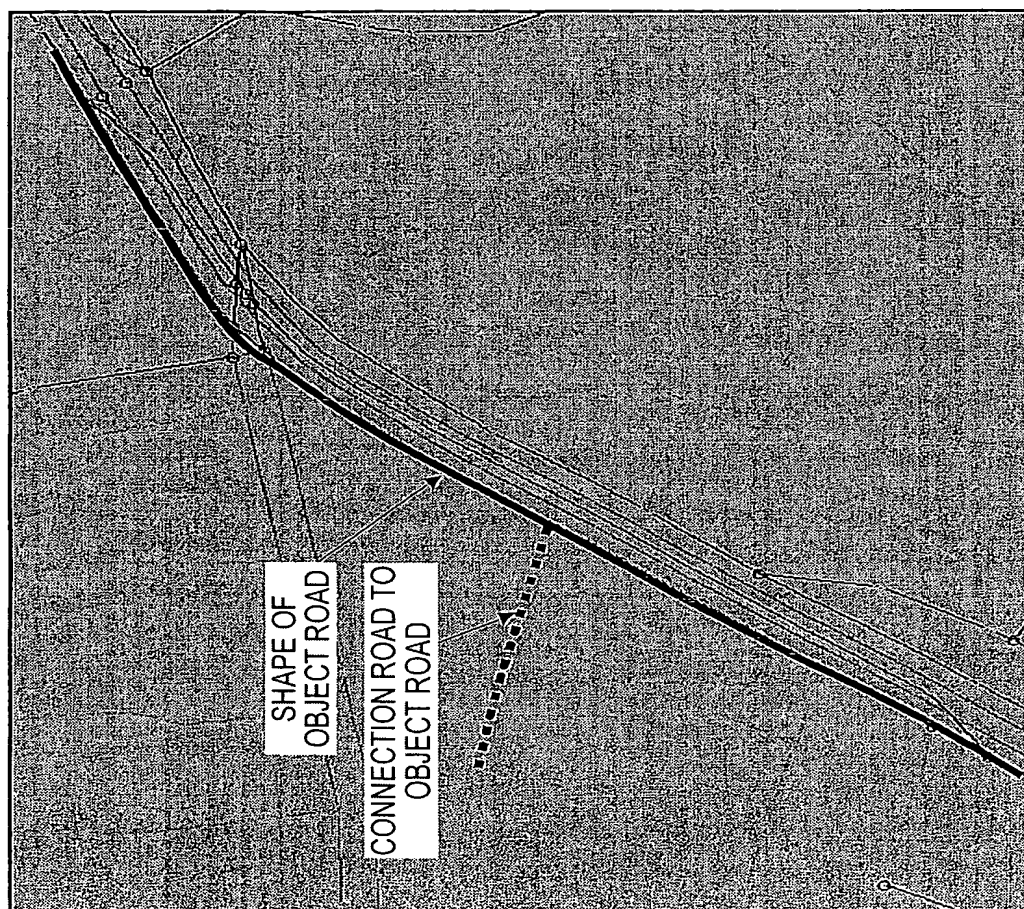


FIG. 40

FIG. 41

